JANUARY 1960

Precision Metal Molding

INCLUDING DIE CASTINGS MAGAZINE

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AN INDUSTRIAL PUBLISHING CORPORATION MAGAZINE

ALSO IN THIS ISSUE: A REPORT ON VACUUM METALIZING AND HOW CASTINGS REPLACE WELDMENTS

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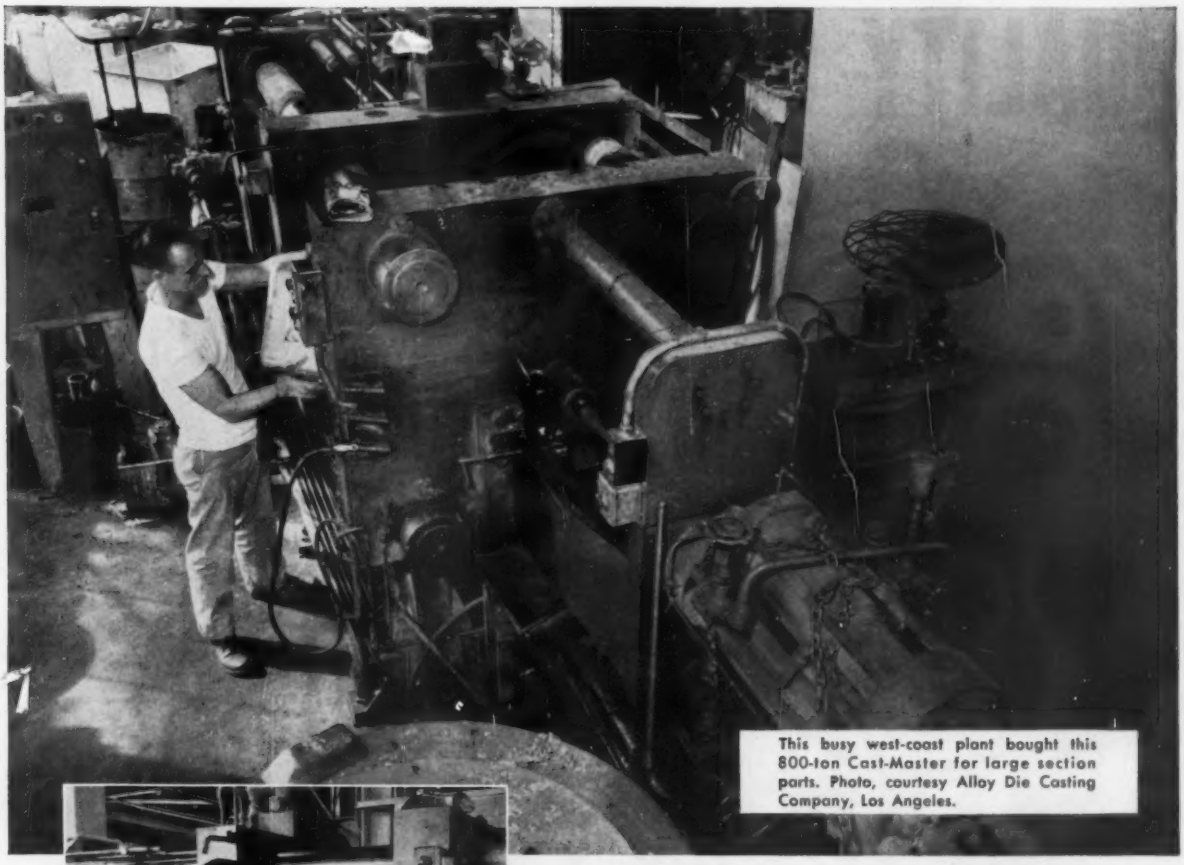

This busy west-coast plant bought this 800-ton Cast-Master for large section parts. Photo, courtesy Alloy Die Casting Company, Los Angeles.

Big, husky, thick section parts with accurate detail and true conformity to close tolerances. These machines are adjustable to all variables within its size range.

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If you're moving up into large section die castings, as typified by these views taken at Alloy Die Casting Company, Los Angeles, this 800-ton Cast-Master has much to offer. Exceedingly versatile, for so large a machine, you can rely on it for more and better die castings for an unlimited variety of jobs. This machine, or any of the Cast-Master line from 100-ton up to 2000-ton clamping force, can modernize your plant for top production. Get the facts, today. Hot or cold chamber types with interchangeable injection ends, doubles the utility of the Cast-Master machine.

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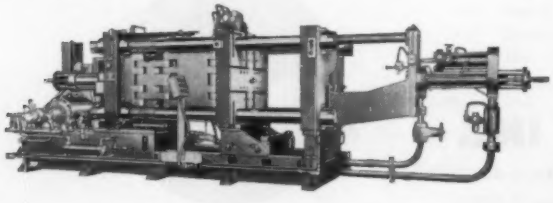

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PRECISION METAL MOLDING

IN THIS ISSUE

January, 1960: Volume 18 Number 1

FEATURE ARTICLES

35 **EXTRUSION HAS SUPERIOR MECHANICAL PROPERTIES**
The use of a brass extrusion has improved the operation and lowered manufacturing costs on an hydraulic pump.

36 **MAN'S OLDEST FROZEN DESIGN**
If anything in this life is fixed and timeless it's the shape of a hammer.

37 **WILL MACHINE OPERATORS BECOME INSPECTORS**
The advent of the small, fully automatic die casting machine permits the operator to act as an inspector only.

38 **CHANGE WELDMENTS TO CASTINGS**
Improved design, increased rigidity, better appearance, and lowered manufacturing costs came with the use of permanent mold castings.

40 **INVESTMENT CASTING IN SHELL MOLDS — PART III**
This last part of this article describes the uses and advantages of Glascast ceramics.

42 **NEW CUTTING TOOL COMPOSITION**
Through powder metallurgy methods, new and better carbide cutting tools can be produced.

45 **SINTERINGS IN POWER TRANSMISSION**
Sintered gears can replace machined ones in many power applications. Here's one case.

45 **DIE CAST MOTOR HOUSINGS**
Where strength, corrosion resistance, accuracy and low cost are needed, try die castings.

46 **CLIPPER CASTING SHEARS COSTS**
Sheep shearing is less expensive thanks to the investment casting process.

46 **BIG EXTRUSIONS FROM SMALL DIES**
If you know how, large, flat, thin extrusions can be made on small presses.

47 **A NEW HORIZON FOR CASTING DESIGN**
The plaster mold casting industry borrowed some of the techniques of investment casting.

48 **DESIGN TIPS**
Complex parts can be made easily and simply by bending extruded sections. Here are some examples.

122 **SINTERED NICKEL BROADENS DESIGN LIMITS**
Nickel powders, pressed and sintered under carefully controlled conditions permit the making of parts not possible before.

123 **57 CONTACT POINTS BY DIE CASTING**
In the design of a power saw, only die casting could give the large number of mounting, locating, and fastening points required.

FINISHING SECTION

51 **THE ECONOMIES OF VACUUM METALLIZING**
For many products a vacuum metallized finish gives the most desirable finish and at the lowest possible cost.

54 **ALUMINUM DIP BRAZING**
Aluminum parts, both wrought and cast, are joined by dip brazing. Here's a short description of a method widely used.

DIRECTORY SECTION

67 **FOURTH ANNUAL DIE CASTING DIRECTORY**
- 67 **How to use the directory**
- 68 **Alphabetical listing of custom die casters**
- 91 **Geographical listing of custom die casters**
- 107 **Suppliers to the die casting industry**
- 115 **Die casting tool and die shops**

DEPARTMENTS

10 Casting About
14 New Products
24 Letters
28 Industry News
62 Useful Literature
121 Opportunities
125 Data in Ads

A brand new 34-ton clipping press from BIPEL . . . world renowned for their plastic molding presses! This special purpose hydraulic unit offers a faster approach, and a fast advance through the work, at full tonnage. Semi-automatic or manual control . . . with mesh guards for maximum operator safety. A flexible, efficient, clean-trimming unit.

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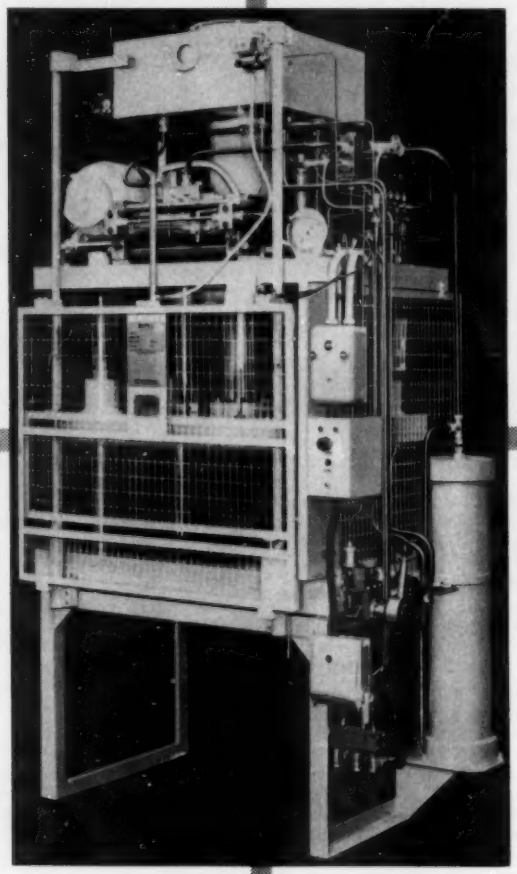

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AMAX ZINC-BASE ALLOYS

mean

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AMAX Zinc-Base Alloys mean better die casting for a number of reasons, but basically, their sum is this one critical fact: *Quality control through every phase of the production cycle.*

From raw materials to final ingot casting, AMAX's rigid standards ensure soundness and uniformity within precise composition specifications. Step-by-step control yields zinc-base alloys which help assure you of uninterrupted, trouble-free casting and flawless products. Exacting standards that are routine practice at AMAX include:

- **Only premium-grade raw materials go into AMAX Zinc-Base Alloys**
- **Sampling and testing is performed at every production step**
- **Each heat is spectroscopically analysed, assuring precise composition**
- **Every individual production order is carefully supervised**

If you would like further facts on the advantages of specifying AMAX, or if you would like technical assistance, please contact the Metal Sales Department.

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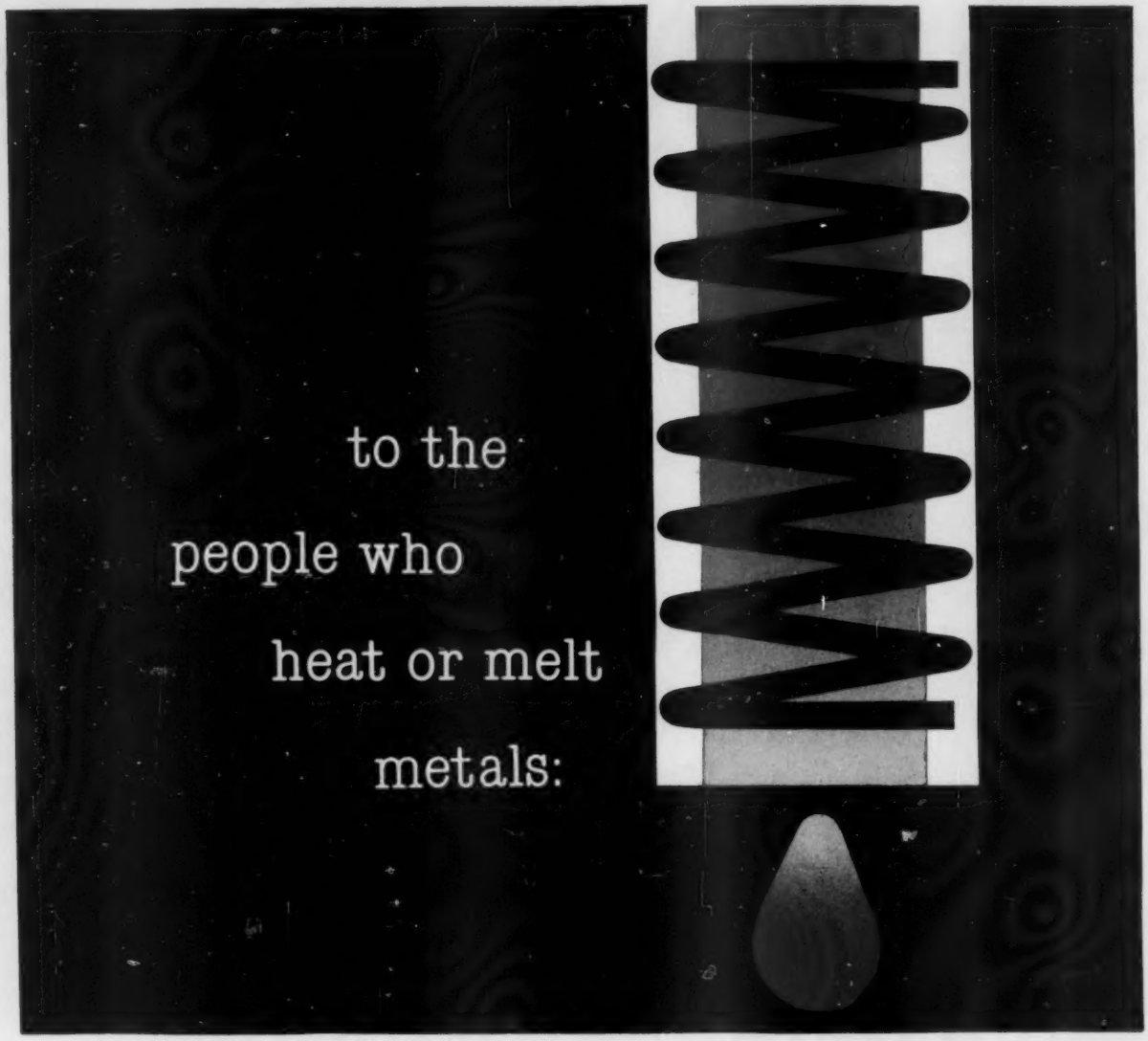

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...and he's turning the adjusting screw on a Lester Die Casting Machine. That eight-year-old *strength and skill* is all that's needed to set the die height on a Lester—with no risk to alignment or accuracy. Contrast this with the scene in many die casting shops where a grown man must *sledge* the tie bar nuts to make a comparable adjustment.

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THE MOST IMPORTANT ALLOY IN A STEEL CASTING IS QUALITY

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CORALITE 3-59 *shows superior resistance to molten aluminum.* In this photograph of a laboratory furnace hearth used for testing aluminum melting furnace refractories, the hearth has been cut in half to show relative resistance to penetration by molten aluminum. On the left is the Harbison-Walker CORALITE 3-59 laid with CORALBOND. On the right is a normal high-alumina brick laid with a widely used air-setting bonding mortar.

Unique refractories developed by HARBISON-WALKER fulfill fast growing needs for aluminum melting furnaces

Among H-W leading refractories developed specifically for modern aluminum melting practice, CORALITE 3-59 brand is particularly worthy of consideration. The unusual combination of physical and chemical properties of this refractory, most highly commend it for the wide diversity of intensified melting conditions.

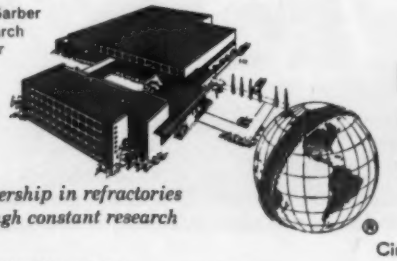
CORALITE 3-59 is a very hard burned brick containing approximately 85% alumina. It is made with a special bond (patent pending) which contributes to its remarkable strength and low permeability. Its transverse strength is three times that of strong fireclay brick. This is the significant criterion of its capacity for withstanding severe impact and abrasion.

SUPERIOR PROPERTIES OF CORALITE 3-59

- ***Resistance to*** penetration by molten metal at maximum working temperatures.
- ***Resistance to*** corrosion by aluminum alloys and various fluxes.
- ***Resistance to*** impact and abrasion accompanying charging of cold metal.
- ***Resistance to*** metal contamination resulting from chemical reaction.

CORALBOND is a phosphate bonded high-alumina mortar developed specifically for use in aluminum melting furnaces. Among numerous mortars of many compositions, CORALBOND is very outstanding in its resistance to penetration and corrosion by aluminum alloys at the furnace operating temperatures.

The Garber Research Center



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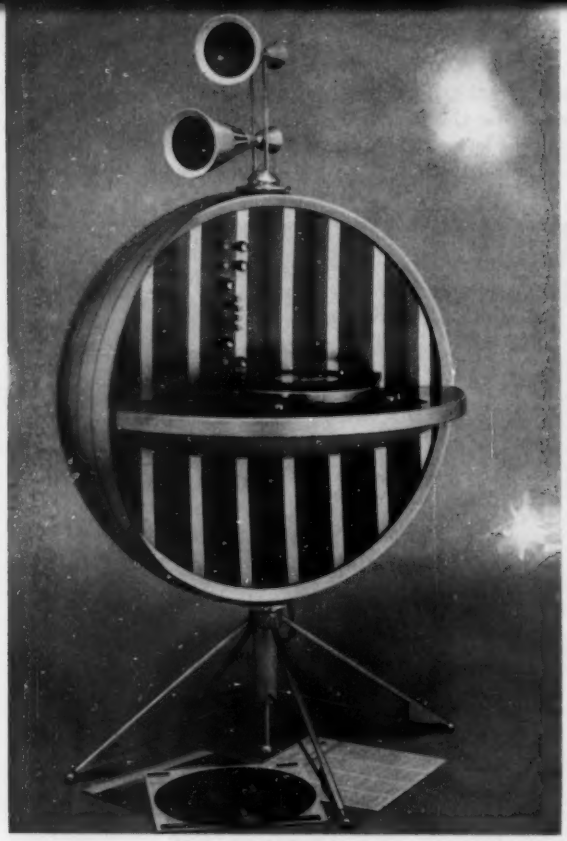

Photo courtesy Aluminum Co. of America

CASTING ABOUT

technical news of applications & processes involving precision metal moldings

FOR THE WORLD OF TOMORROW the designer turns to aluminum. Not on the market yet, and not even contemplated for production, the stereophonic high fidelity record player created by Lester Beall, a well-known American designer, can only fit into the house of tomorrow. In addition to providing an acoustically correct musical instrument, Beall sought visual and actual lightness, since an intuitive visual feeling of lightness is a natural association with music. The forecast music sphere is aimed at a creation adaptable in terms of interior decoration to almost any situation. It represents a radical departure in appearance. So, because it is a design of the future, Beall chose aluminum in cast, extruded, and wrought forms, since, in his opinion, it is the metal of the future.

THE FORECAST MUSIC SPHERE, created by Lester Beall represents a wholly new approach to design of sterephonic high fidenity system enclosures.

PURE MOLYBDENUM and tungsten in bars, rods, strips or sheets can now be made, according to a report from Westinghouse Electric Corp. Charles Deibel and Frank Emley, Westinghouse metallurgists, have developed a practical method of continuous compacting the powders of these metals so that the only limit to the length of product made is the supply of metal powder. Instead of continuous rolling as is done with copper and iron powder, the new method uses a three-sided channel with a plunger descending from above. The powder is fed continuously into the channel and is compacted by a wedge shaped plunger. Density of the finally compacted bar is determined by the slope of the plunger face. So far, bars up to 2" thick and 12" wide have been made. Length is determined only by the amount of powder supplied.

ALUMINUM EXTRUSIONS are finding new uses all of the time. Now they have moved into the truck and trailer field as structural members. The Penn Body Div. of the Hockensmith Corp. has come up with an advanced dump body design utilizing extrusions for rub rails, top cap and side braces. The use of extruded rails and braces eliminated 40 bends previously required to form the comparable components. The strength of the dump body is substantially increased with this construction. Another big advantage is that extruded members are more easily and quickly assembled. The result is an overall savings in the cost of the dump body.

Photo courtesy Kaiser Aluminum & Chemical Co.

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LOW-COST VACUUM DIE CASTING

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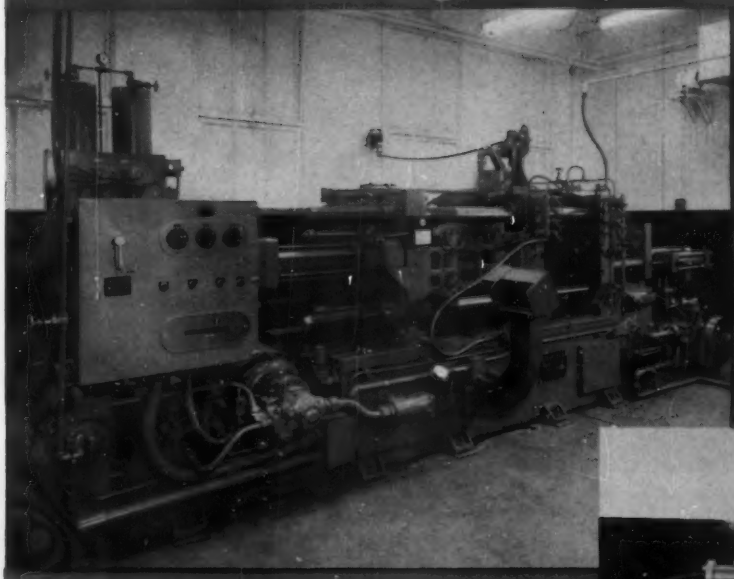

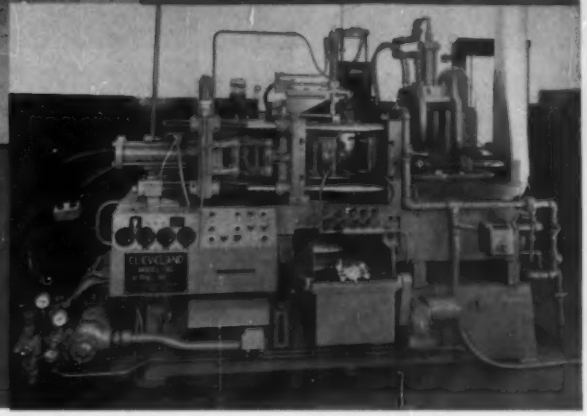

In Cleveland's Die Casting Development Center are a fully automated 50-ton Cleveland (right) producing a multiple-cavity zinc casting on an around-the-clock, 7-second casting cycle, and a 400-ton Cleveland (above) that incorporates vacuum die evacuation and advanced features for aluminum die casting.

Extensive work in Cleveland's Die Casting Development Center has produced the industry's most advanced engineering of **vacuum die evacuation** and **full automation.*** Equally important, these developments carry **most modest price tags!**

**Other important die casting development work is in progress*

Shown above are a Cleveland Model 50 Zinc Machine and a Model 400-N Aluminum Machine that incorporate these and many other advanced engineering features. These two machines are now in operation in our plant. Call in a Cleveland field engineer. Let him provide you with full details and schedule your visit to see these machines in action.

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provides cost savings by eliminating secondary operations. Irregular surface curvatures, thick and thin sections and shaped internal and external surfaces provide complete design freedom — no need to compromise with production limitations.

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CLOSE TOLERANCES ON INTRICATE PARTS . . .

V-R specializes in casting *small* parts — often too small and intricate to be machined economically. Uniform, close tolerances are held throughout the entire production quantity.

METALLURGICAL KNOWLEDGE AND ENGINEERING SERVICE . . .

V-R metallurgists will be glad to study your application and recommend the proper alloy for your parts. Just send us the details of your problem including parts drawings and the requirements for resistance to heat, corrosion and wear.

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I-736R

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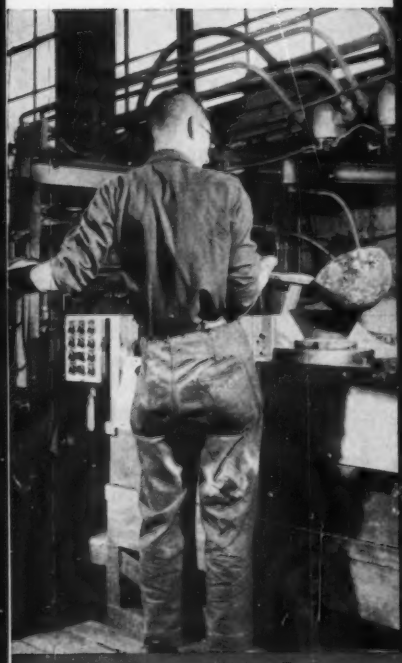

Cellulube 300 also solved problems of sticking valves and line leaks... improved overall system efficiency

With ordinary hydraulic fluid, the high operating temperatures of the centrifugal caster at U. S. Electrical Motors Inc. made it essential to add detergent regularly to clean sticking valves. Furthermore, it was necessary to change hydraulic fluid frequently in order to reduce formation of sludge and varnish.

Since converting to Celanese Cellulube 300 in early '57 (primarily to eliminate the hazards of fire due to possible line breaks) it hasn't been necessary to change fluid, nor have sticking valves been a problem. In addition, valve leaks are virtually eliminated.

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Celanese
CHEMICALS

NEW PRODUCTS AND DEVELOPMENTS

Qualified readers can get complete details on these products. Use the Reader Service Cards. You'll find them facing page 126 of this issue

MASK WASHER IS PORTABLE

CONFORMING MATRIX CORP. — This small portable mechanical mask washing machine will effectively wash masks measuring up to 10" x 10" in a matter of seconds. Cleaning is accomplished by violent agitation of the cleaning solvent. Features of the unit include an air motor that requires from 2 to 7 C.F.M., and a solvent tank with a 7 gallon capacity.

The washer, designated as Model W-1500-S, is said to be priced low enough to make it practical to install the machine at every spray finishing station.

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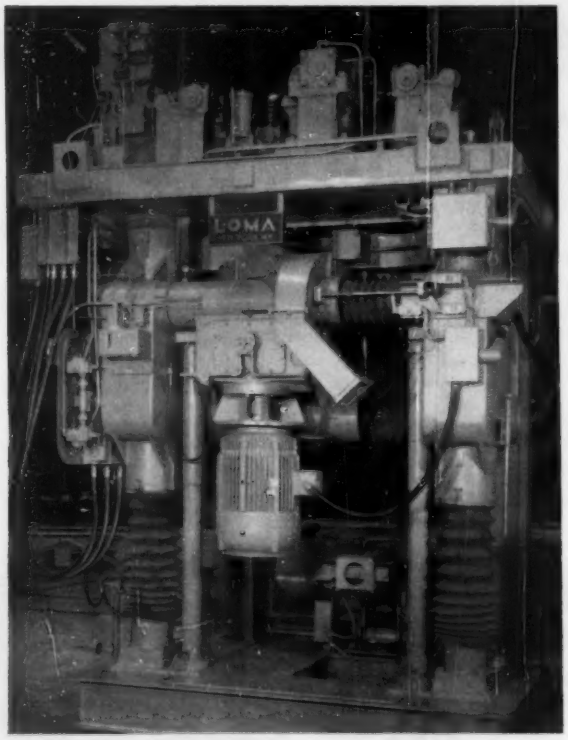

ELIMINATES MANUAL LOADING, UNLOADING

ROTO-FINISH CO. — The Roto-Finish Vibratron has been redesigned to eliminate the need for manual loading and unloading of parts and media. A built-in, removable, double-decked vibrating separator, located in the base of the unit, separates parts and media as well as media fragments, in one operation. This is reported to eliminate the need for an extra separator.

The unit can be hopper-fed, and the new design permits discharge of finished parts onto a conveyor. The Vibratron will finish complex cast parts, with hard-to-reach surfaces.

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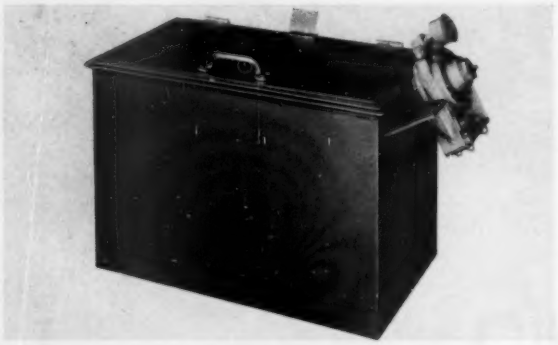


CONTINUOUS CASTING COPPER BILLET

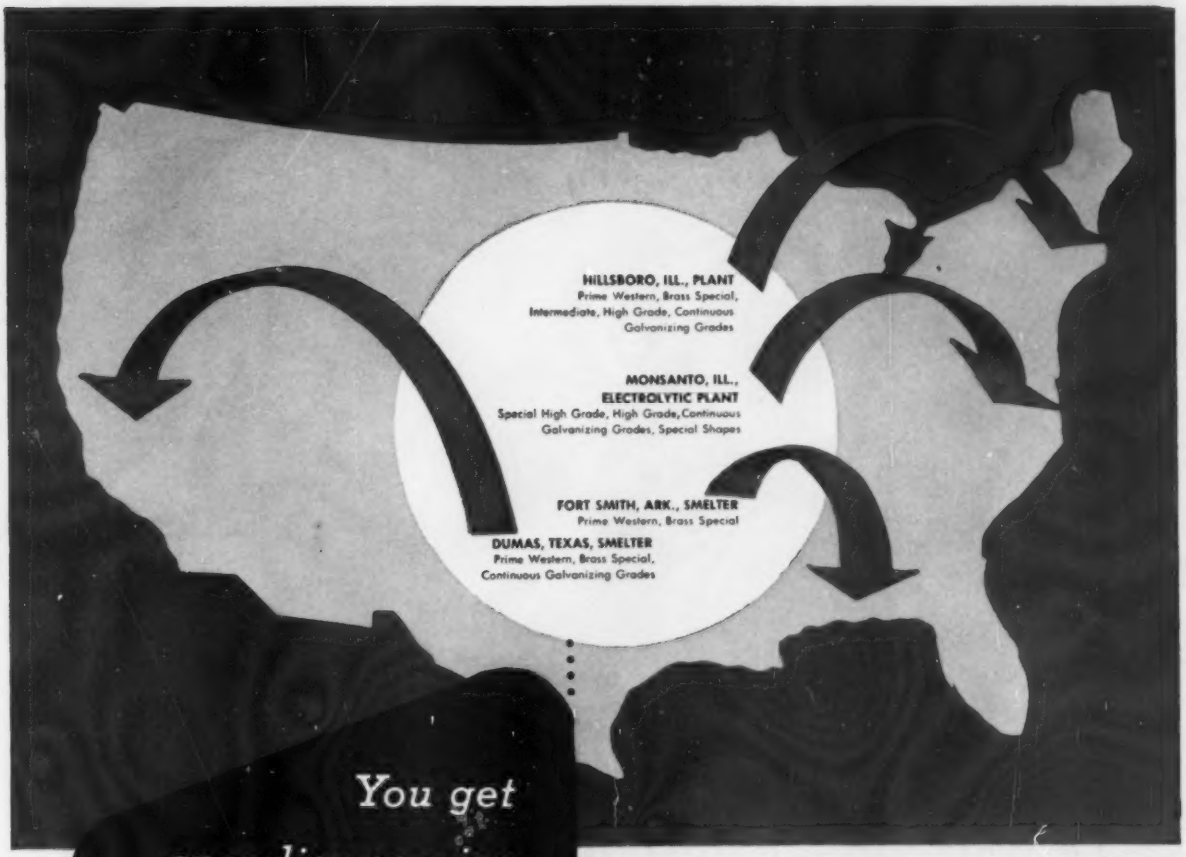
LOMA MFG. CO., INC. — Copper billet and slab casting techniques are said to have been considerably updated by the development of this new fully continuous casting machine. The unit will handle copper in all its various forms from phosphor de-oxidized and oxygen-free to fire refined and tough pitch. Basic design of the machine also lends itself to casting the brass, bronze, aluminum, and magnesium alloys.

Shapes that can be produced by the machine include round piercing and extrusion billets. Production capacity ranges from 3 tons per hour for double-strand casting of 3" diameter billets to 10 tons per hour for single-strand casting of 5½" x 33" slabs.

The machine is usually fed liquid metal from either an arc or induction melting furnace followed by an induction holding furnace. Molten copper at 2150° F. then flows through a refractory-lined distributor equipped with down spouts that extend into the molds. Metal flow is controlled by the operator with needle valves. This "underpouring" method assures smooth, splash-free entry of clean metal into the mold cavity. This eliminates internal porosity and inclusions in the cast metal.

Circle No. 237 on Reader Service Card

continued on page 18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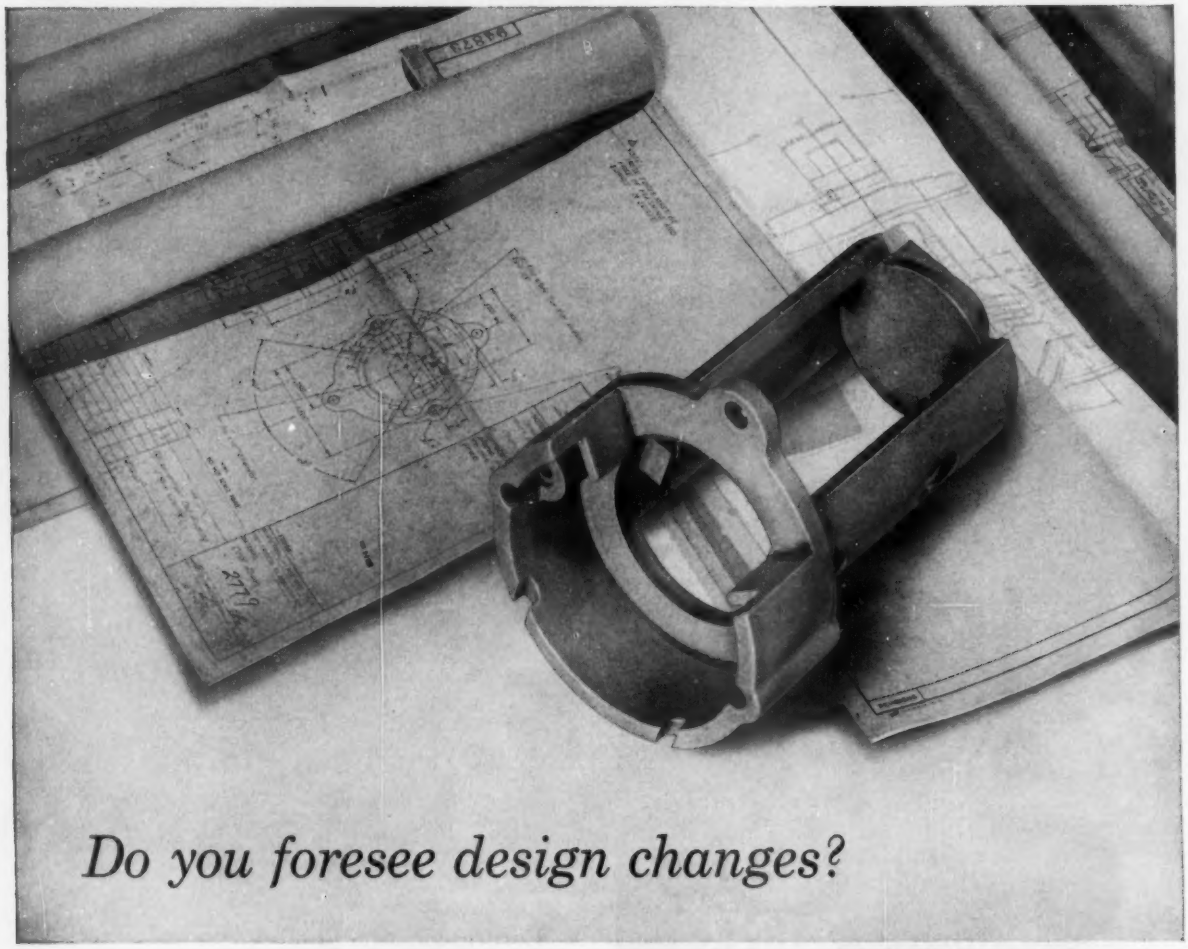

Do you foresee design changes?

...ask Arwood about investment casting

Investment casting offers you just about the most inexpensive, convenient way you can find to get your new part from the drawing board to finished, production line quantities. This is especially true when your design may involve some degree of complexity... a strong, tough alloy... time-consuming machining steps ... expensive tooling.

There are good reasons. With investment casting, tooling is quick and inexpensive. It's easy to modify finished dies as the need for design changes develops. Even more important, Arwood will handle the whole job for you, from blueprints through to the finished part.

It makes no difference what metal or alloy you specify; Arwood casts a complete range of ferrous and non-ferrous materials. The skilled toolmakers at each of our four foundries can turn out fifty or more dies each week. So to save time and cut your costs between the drawing board and finished parts, ready for assembly, get in touch with Arwood.

Write today for your free copy of the new 44-page Arwood "Practical Guide to Investment Casting." It provides all the information you need to evaluate the technique and use it to help solve your design problems.

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with lithium stearate

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Typical results promise 20% stronger, 100% more ductile parts as well as safer, more economical sintering operations.

TRY IT NOW YOURSELF!

All you need is a special powder metallurgy grade lithium stearate (fluffy) available only from us. We'll send you complete facts and lubricant samples on letterhead request. Foote Mineral Company, 474 18 West Chelten Bldg., Phila. 44, Pa.

FOOTE MINERAL COMPANY

Circle No. 38 on Reader Service Card

NEW PRODUCTS

continued from page 14

SOLDERING TOOL FOR ALUMINUM

REYNOLDS METALS CO.—Soldering aluminum has been made quick and easy with the development of a new soldering tool. The tool is a long-handled holder for a glass-fiber brush insert. This brush is rubbed through molten solder, removing surface oxide for a smooth, strong aluminum-to-aluminum joint. The tool, which comes complete with soldering stick and brush refills, is said to eliminate tinning and fluxing operations. An ordinary torch is the only additional equipment needed.

Circle No. 238 on Reader Service Card

PREVENTS SCALE FORMATION

NAVAN PRODUCTS, INC. — The prevention of scale formation on metal during heat treatment is possible with Skalix, a coating that adheres to the metal at furnace temperatures forming an oxygen-tight seal. The coating, which can be used on stainless steel, nickel-chrome alloys, cobalt alloys, copper alloys, and the newer exotic alloys, comes off by itself as the metal cools.

Circle No. 239 on Reader Service Card

PLASTIC SEALER-FILLER

FYBRGLAS INDUSTRIES, INC.—Bond-Zall is an adaptable plastic sealer-filler that is said to save casting rejects and correct assembly line damage. The plastic is permanent, and may be sawed, sanded, finished, and painted.

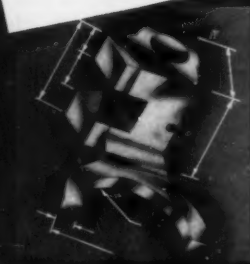
Circle No. 240 on Reader Service Card

BUNTING® BEARINGS

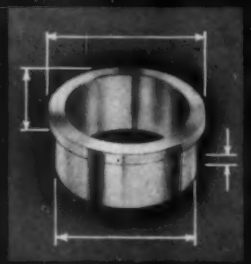
engineering for **both** cost and mechanical requirements in the bearing field . . .

Bunting can help you identify and procure the bearing or part that will do your job at the lowest possible cost. Often a re-examination of the actual mechanical needs of a bearing application reveals an opportunity to save money in design. Another saving is almost invariably achieved by considering ALL the new bearing materials which Bunting makes available to you today. Let Bunting help you engineer your bearing application in the light of modern availabilities. Send in your blueprints or ask for engineering counsel.

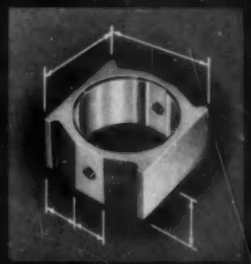
...case in point*



*Clearly evident is the economy in the production of this shifter fork by Bunting Powder Metallurgy. The elimination of machine work effects striking cost reduction.



*This cylinder gland bearing made of Bunting Bearing Aluminum is an example of how to save weight and money on the cost of large, thick-wall bearings and parts.



*This cast bronze cam block, made to unusually close limits with very fine finish, is absolutely round and true to size with cost at a feasible figure.

*Solid cast aluminum gear bearing to replace roller bearing for longer life and lower cost.

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FOR DEPENDABLE PROTECTION on all Hydraulic and other low pressure circulating systems

Designed to give more ACTIVE filtering area—MORE dependable protection—MORE productive operation before cleaning is necessary. *Meet J.I.C. Standards.*

A

A—Synclinal SUMP TYPE
CAPACITIES: 5—8—10—20—30—50—75 and 100 G.P.M.
PIPE SIZES: ¾"—1"—1¼"—1½"—2"—2½" and 3".
CONNECTIONS: Coupling—Male Nipple.
BY-PASS VALVE: Not available.

B—Synclinal LINE TYPE
CAPACITIES: 5—8—10—20—30—50—75 and 100 G.P.M.
PIPE SIZES: ¾"—1"—1¼"—1½"—2"—2½" and 3".
BY-PASS VALVE: Not available.
OPERATING PRESSURES: Up to 80 p.s.i.

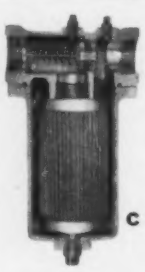
C—Bonded LINE TYPE
CAPACITIES: 10—20—30—50 and 75 G.P.M.
PIPE SIZES: 1"—1¼"—1½"—2" and 2½".
BY-PASS VALVE: Available with or without.
OPERATING PRESSURE: Up to 250 p.s.i.
OPERATING TEMPERATURES up to 300° F.

B

D—IN-LINE FILTER
CAPACITIES: Up to 60 G.P.M.
PIPE SIZES: ¾"—1"—1¼" and 1½" (at both inlet and outlet).
BY-PASS VALVE: Available with or without.

E—Bonded SUMP TYPE
CAPACITIES: 10—20—30—50 and 75 G.P.M.
PIPE SIZES: 1"—1¼"—1½"—2" and 2½".
CONNECTIONS: Coupling—"O" Ring—Male Nipple.
BY-PASS VALVE: Available with or without.

F—Tandem SUMP TYPE
CAPACITIES: 10—16—20—40—60—100—150 and 200 G.P.M.
PIPE SIZES: ¾"—1"—1¼"—1½"—2"—2½" and 3".
CONNECTIONS: Coupling—Male Nipple.
BY-PASS VALVE: Not available.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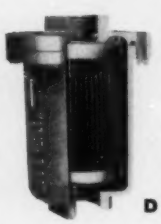
D

E

F

FILTERING MEDIA in all Marvel Filters is Monel wire cloth available in mesh sizes of 30-40-50-60-80-100-150 and 200 to meet your filtration requirement.
EASY TO CLEAN—All Marvel Filters are easy to clean. Line type units operate in any position and may be serviced without disturbing pipe connections.
OVER 900 O. E. M's. install Marvel Filters as Standard Equipment.

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For further information on a specific type filter—Write—wire or phone

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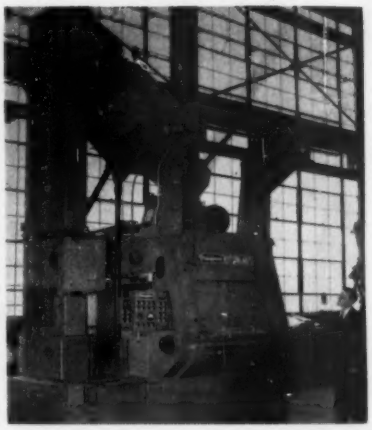
NEW PRODUCTS *continued*

MOLD RELEASE OIL

SUN OIL CO. — A new die casting mold release oil has been introduced that reportedly develops comparatively less fog during die casting and gives excellent lubrication, which minimizes wear on guide pins and bushings. The oil features: Improved mold release properties; prevents adhesion of casting metal to the die mold; gives bright, stain-free surfaces; produces castings with less porosity.

Circle No. 241 on Reader Service Card

BLAST CLEANING BARREL



PANGBORN CORP. — The Rotoblast cleaning barrel can clean large castings weighing up to 500 lb. each and will handle a batch load of 2700 lb. The unit incorporates a 30-hp wheel which delivers 50,000 lb. of abrasive per hour. Features include a rugged, close-fitting, slat-type work conveyor that is reportedly quiet running and jamproof. An automatic torque arm immediately disengages the shaft-mounted reducer drive in the event of a jam.

Circle No. 242 on Reader Service Card

INSULATING FIRE BRICK

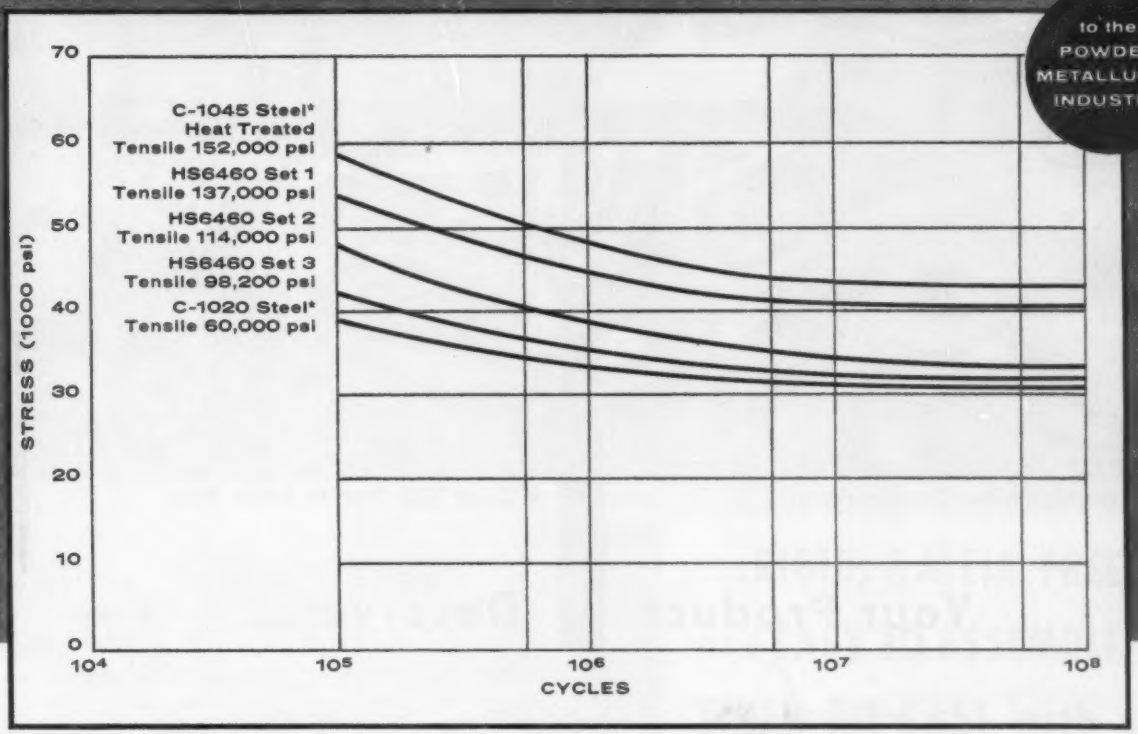
HARBISON - WALKER REFRACTORIES CO. — H-W 23-LI low iron insulating fire brick, developed for controlled atmosphere furnaces, is now available. It has a high degree of purity with exceptionally low content of reducible oxides. Tests have shown that the brick will withstand the most severe reducing atmospheres without evidence of deterioration.

Circle No. 243 on Reader Service Card

REPUBLIC PROGRESS REPORT

to the POWDER METALLURGY INDUSTRY

Comparative Fatigue Test Data on Republic HS6460 High Strength Powder, C-1045 Steel (Heat Treated), C-1020 Steel



Procedure Used to Obtain Test Results

Material—Type HS6460 with 1% zinc stearate. Single press and sintered blank, machined to standard A.S.T.M. Fatigue Bar. Testing machine—R.R. Moore Rotating Test Beam.

Sintering conditions, Sets 1, 2, and 3—Endothermic atmosphere, dew point +25°F, 2050°F, 45 minutes at heat (extended time because of size). Combined carbon—0.40%.

Heat treating conditions, Sets 1, 2, and 3—Endothermic atmosphere, dew point +45° to 50°F, 1625°F, 20 minutes total time in furnace (approximately 10 minutes at heat). Quenched in oil at 135°F. Draw 400°F, 30 min.

Briquetting Pressure. Set 1—100,000 psi, density 6.70 gm/cc. Set 2—80,000 psi, density 6.50 gm/cc. Set 3—60,000 psi, density 6.18 gm/cc.

*Data on C-1045 heat treated steel and C-1020 hot rolled steel obtained from ASM Handbook, 1948 Edition, Page 119.

For more information, write Republic Steel, Dept. PM-8774, 1441 Republic Building, Cleveland 1, Ohio.

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Ultra-Precision
MOLDS

We are proud to have won recognition as one of the leaders in this highly specialized field — serving the Die-Casting and Plastics Industries. For more than 25 years, our facilities and services have been utilized by an ever-increasing list of blue-chip companies. We cordially invite you to take advantage of our facilities, our know-how, our reputation for precision-made molds — promptly delivered and economically priced.

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IT'S LIGHTER THAN YOU THINK!

...RIGID, RATTLE FREE and EASY TO ASSEMBLE WHEN DIE CAST with ZAMAK®

Light-weight, ZINC die cast instrument housings are finding extensive use in 1960's precision-engineered automobiles. Designed for the new MERCURY, this is an excellent example of the way automotive engineers are getting the most value—at low cost—from a single, rigid, rattle free and easy-to-assemble unit.

Integrated designing of panels and instrument clusters for ZINC die casting eliminates the cost of sub-assemblies and extra parts, unitizes instrumentation, provides space-saving facilities for wiring and saves weight. In this one complex, thin-wall, ready-to-use ZINC die casting are integrally cast bosses and studs for rapid assembly, framing members and supports for finish pieces.

Here, as in many other applications, rugged but extremely thin-wall sections—possible only with ZINC die castings—minimize weight and are stronger **in proportion to thickness** than heavier sections. Weighing only 7½ pounds, the over-all measurements of this MERCURY instrument cluster are 22½" long, 12" high and 6½" deep, with a minimum wall thickness of .037".

HORSE HEAD® SPECIAL ZINC AND HORSE HEAD ZAMAK ARE PRODUCED BY

THE NEW JERSEY ZINC COMPANY

DEVELOPERS OF THE ONLY STANDARD ZINC DIE CASTING ALLOYS IN USE TODAY

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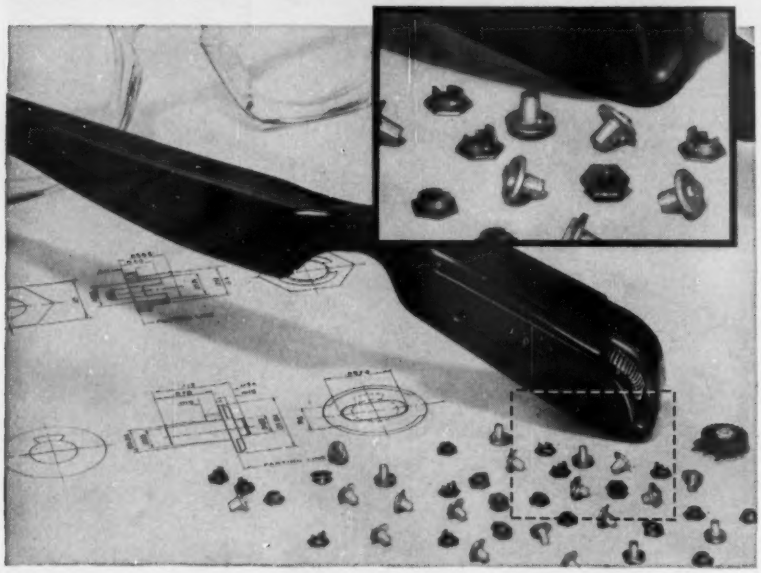
HORSE HEAD PRODUCTS ®

Circle No. 71 on Reader Service Card

MINIATURE HEARING AID CONTROLS DEPEND ON TINY GRC DIE CASTINGS



Tiny, uniform zinc alloy parts to watchmaker's specs achieved through GRC's exclusive methods

A modern hearing aid small enough to fit into the temple piece of an eyeglass frame requires components and parts that must meet the same exacting specifications as the parts for a fine watch. Design engineers at Centralab, a division of Globe-Union, Inc., turned to Gries to produce the two tiny precision parts forming the mechanical center of a newly designed "Micro-Miniature" hearing aid volume control potentiometer . . . a .112" shaft and a bushing measuring .125" in diameter.

To function properly the two mating parts had to be manufactured within tolerances of ±0.0005". The shafts—9500 to a pound—were cast with a button-like disk and fastening lug at one end; a projecting tapered shaft for the bushing to rotate on and a stop lug to limit rotation on the other end. The even smaller—21,000 to a pound—slotted bushings were formed with a hex nut section and an extension to engage the shaft's stop lug. Electrical contact is made through the bushing.

This is a typical example of how GRIES' exclusive patented single cavity methods for automatically producing tiny, uniformly accurate, precision parts, economically solved a design problem.

Whether simple or complex, quality is always high—no secondary operations, no scrap loss. GRC parts leave the machine ready for immediate use.

GRIES' exclusive single cavity methods open new approaches to product design . . . economical production shortcuts. Find out how GRIES can help you. Write for GRC bulletins on small zinc alloy die castings and molded thermoplastic parts or send prints for immediate quotations. Maximum sizes 1¾" long, ½ oz. in zinc alloy; 1¼" long, .03 oz. in plastics. No minimum size.

GRC Die Cast Zinc Alloy Washer Base Wing and Cap Nuts Eliminate Separate Washers

Save inventory, assembly time, and labor, with these wide-diameter washer base nuts. GRC offers prompt delivery from stock in a complete range of 14 thread sizes: #6 through ⅜". Used for all normal requirements and wherever separate washers would be required. Especially suited for oversize bolt holes, adjusting slots, soft surfaces.

Write, wire, phone today for GRC's new detailed fastener catalog—your handy guide to low cost quality fasteners.

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Circle No. 42 on Reader Service Card

PMM LETTERS

the readers' forum

DIE CASTING ACCESSORIES

Could you kindly furnish us with information on manufacturers of sprue extractors for removing sprues from the stationary die platen of hot chamber pressure die casting machines.

Also, suppliers of elevating tables for use in toolroom and die casting shops.—S.C., (Israel).

As far as we know, there's no special tool required to remove sprue bushings from the cover half of die casting dies. Unless the bushing is water cooled it is generally just pressed into the die block and shoulders against it. To remove the bushing, the die half must be removed from the machine and pressed out. We've checked this request with several machine builders and they do not know of any special tools for this job either.

The names of five companies who make elevating tables have been furnished.—ed.

Kindly let us know by return mail the names of American manufacturers of Pots, Goosenecks, and other accessories for die casting machines.—H.P., comptroller (Canada).

Names and addresses have been forwarded.—ed.

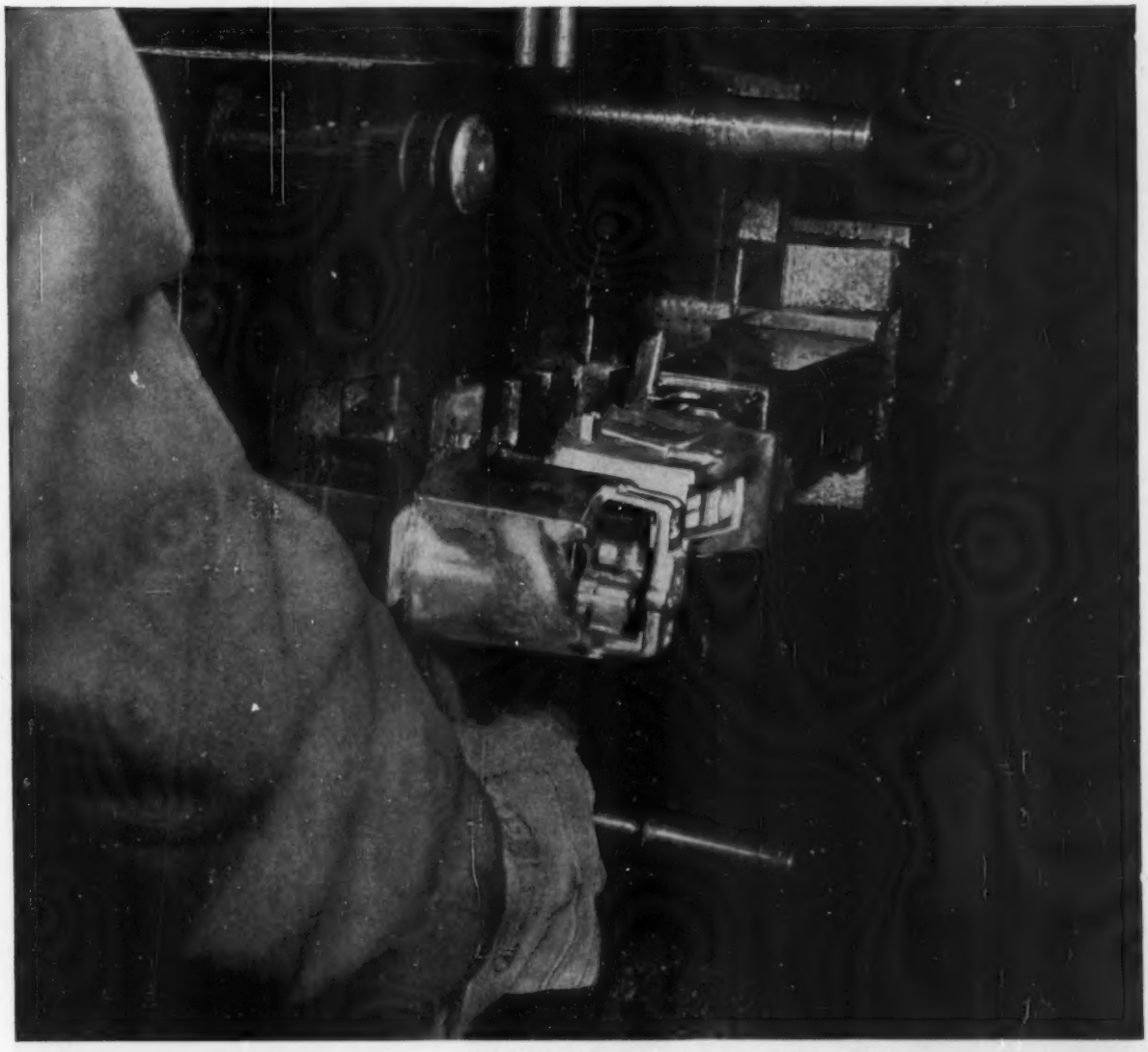
INVESTMENT SHELLS

Your June, 1958 issue of PRECISION METAL MOLDING, contained an article by H. J. Marshall entitled "Investment Casting In Europe." The article described the Plycast Investment Casting Process and ended by stating that "full details . . . will be published in the near future . . ."

Has a subsequent article been prepared concerning the Plycast Process? Please advise of any additional available information.—J.J.P., development and technical services.

No further specific information has come to us yet. However, since the process is one developed by the Austenal Labs. and their associates, further information can probably be secured from them. The addresses have been furnished.—ed.

continued on page 66



H-13 tool steel was used by Dollin Corp., Irvington, N. J., in die casting this aluminum motor housing. The die provided long service, and good resistance to heat checking and wash.

For Die Casting at 1200F to 1300F Team Up with H-13 Tool Steel

Because of its high vanadium content, AISI H-13 tool steel is a natural for die casting aluminum- and magnesium-base alloys in the 1200F-1300F range.

• Bethlehem's grade of H-13—Cromo-High V—has distinct advantages for this type of service. It has good machinability, because it is furnished in the annealed condition to Brinell 207. It has excellent resistance to the formation of a fine network pattern of heat checking. In heat-treatment, Cromo-High V develops uniform hardness, which gives it the ability to resist wash and erosion.

TYPICAL ANALYSIS

Carbon 0.40 Chromium 5.25 Vanadium 1.05
Molybdenum 1.25 Silicon 1.00

Your Bethlehem tool steel distributor will be pleased to provide full information about Cromo-High V, or any of our other die casting die steels. Get in touch with him.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.
Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL

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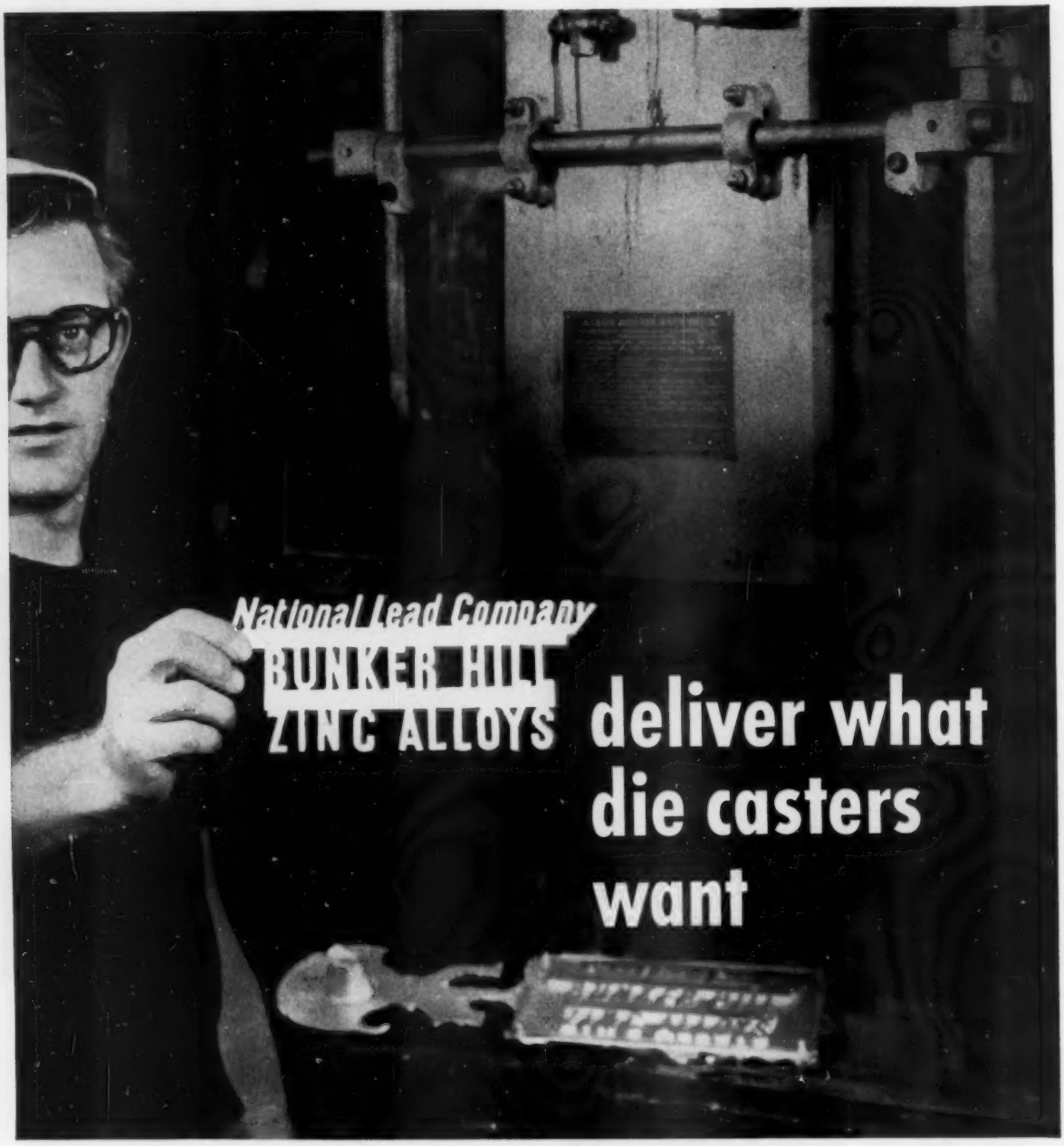

Whatever you want in zinc alloys you get in *National Lead* Bunker Hill Zinc Alloys.

They're exceptionally pure. In fact, they more than meet ASTM and SAE specifications for freedom from contaminants.

You can count on *National Lead* Bunker Hill Zinc Alloys to give you sound, high-strength, porosity-free castings that require very little machining. What's more, they trim, punch, tap and broach cleanly . . . plate with little or no preparation . . . help you maintain fast, continuous production on all machines . . . and cut rejects to the bone.

Remember, the fastest forming process — from metal pig to manufactured part — is at its best only with the finest alloys. *And those are National Lead Company* Bunker Hill Zinc Alloys. When you need them — call us.

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LOW COST

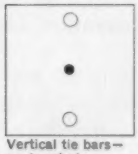
DCMT MAC 99

Automatic Cycling Die Casting Machine

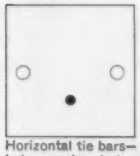
15 Ton • 1 lb. capacity

4-WAY ADJUSTABLE DIE UNIT FOR GREATER FLEXIBILITY

Vertical tie bars—below center shot



Vertical tie bars—center shot



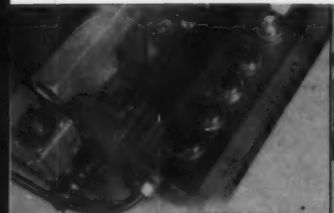
Horizontal tie bars—below center shot

Horizontal tie bars—center shot

FEATURES: push button panel (see below) • **90° convertible die unit** and **removable spacer plate** (see below) • **broader and huskier base** for greater stability and less vibration • **new solenoid-operated valve system** with **speed control** for die setting and shockless cycling • **exhaust mufflers** for quiet operation • Optional features: **electronic timer unit** (see below) for automatic cycling • **a brush device** mounted over the dies, cleans and lubricates the die faces (see below).

Circle No. 123 on Reader Service Card

B.I.C. ENDORSED QUALITY



PUSH BUTTON PANEL

Mounted on side of machine away from die parting line. Push buttons for manual cycle and for automatic single cycle. Electrically interlocked for safety.

ELECTRONIC TIMER UNIT

Entirely enclosed in a metal container. Can be attached instantly to the control panel with quick-connect plugs, and be placed away from machine.

4-WAY ADJUSTABLE AND REMOVABLE DIE UNIT

Can be adjusted with tie bars horizontally or vertically. Spacer plate is removed for center gating. These four adjustments provide greater die setting flexibility.

BRUSH DEVICE

Mounted over the dies. Cleans and lubricates the die faces. Phosphor bronze brushes placed in segments for desired adjustment and easy replacement.

Mail this coupon for full information to:

DCMT SALES CORP.

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NEWS OF INDUSTRY & ASSOCIATIONS

activities of people, companies & groups in the precision metal molding industries

WAIMET ALLOYS COMPANY MOVES

NEW HOME of Waimet Alloys Co.

WAIMET ALLOYS CO., producers of stainless steels, tool steels, and superalloys, has moved its headquarters and manufacturing facilities to 5320 Oakman Blvd., Dearborn, Mich.

The new building offers increased space for the company's metallurgical operations. The company, whose principle products are alloys in shot and ingot form, mostly for the investment casting industry, has expanded into production of hard facing welding rod and special alloy welding rod. With the larger quarters in the new plant, production will start on high alloy forging billets.

The new plant will house complete metallurgical and testing laboratories for both production control and development work.

ALUMINUM EXTRUDERS EXPAND MEMBERSHIP

Because extruders of metals other than aluminum have expressed a great deal of interest in the technical programs of the ALUMINUM EXTRUDERS COUNCIL, the AEC board of directors has established a new membership classification — technical associate member.

All companies extruding steel, titanium, brass, and other metals may now join the Aluminum Extruders Council and participate fully in its technical sessions, which are featured at Council Conferences.

CHROMALLOY CORP. BUYS SINTERCAST

CHROMALLOY CORP. has acquired SINTERCAST CORP. OF AMERICA, which will operate as a division of Chromalloy. Sintercast produces special tool materials, boron, tungsten and titanium compounds, and nuclear reactor metals.

Sales and production of tool materials and nuclear reactor metals will be expanded by Chromalloy which, in addition to its White Plains plant, operates a Propellex Chemical Div., an Elyria Foundry Div., and a subsidiary, Chromalizing Corp.

CRUCIBLE STEEL BUYS STEEL DEGASSING UNIT

CRUCIBLE STEEL CO. OF AMERICA has purchased a Dortmund Horder Huttenunion degassing unit, the first to be installed in this country. The equipment, which will be used to improve special purpose steels, will be erected at the company's Midland Works early this year on a pilot production basis.

The complete installation will be designed and built by the LECTROMELT FURNACE DIV., MCGRAW EDISON CO. The equipment will be capable of degassing alloy steel heats up to 200 tons, at a rate approaching one million tons a year.

FORM NEW ALUMINUM FIRM IN ARGENTINA

KAISER ALUMINUM INTERNATIONAL and GUILLERMO DECKER S. A., a producer of non-ferrous metal products in South America, are organizing a new aluminum fabricating company in Argentina. The new company—INDUSTRIAS MANUFACTURERAS DEL ALUMINO—will have an initial capitalization of about $7 million for new plant facilities.

The plant, to be located near major markets, will manufacture a variety of mill products for the building, consumer durable, container, and transportation industries. Production will start early this year, with full operation scheduled for 1961.

Ownership and character will be principally Argentine, with Argentine citizens employed in all management and production functions. Kaiser Aluminum will invest more than $3 million in the new company, and provide management and technical assistance for operations, marketing, and sales.

BINKERD HEADS SALES AT NRC EQUIPMENT

R. H. BINKERD

R. H. Binkerd has been appointed general sales manager of NRC EQUIPMENT CORP., high vacuum equipment manufacturing subsidiary of NATIONAL RESEARCH CORP. He will formulate overall sales policies and supervise activities of the field staff and distributors.

Binkerd formerly was manager of sales and marketing of the Spring and Forge Division of Alco.

Circle No. 122 on Reader Service Card

Your source for quality controlled aluminum die-casting metals. Federated aluminum ingot production is under rigid controls developed by Asarco's Central Research Laboratory. Federated Sales Engineers back up every shipment with on-the-spot assistance based on long detailed experience. For a complete choice of both aluminum and zinc die-casting alloys, call any one of the 11 plants and 23 sales offices of Federated Metals Division, 120 Broadway, New York 5. In Canada: Federated Metals Canada, Ltd., Toronto and Montreal.

FEDERATED METALS DIVISION OF

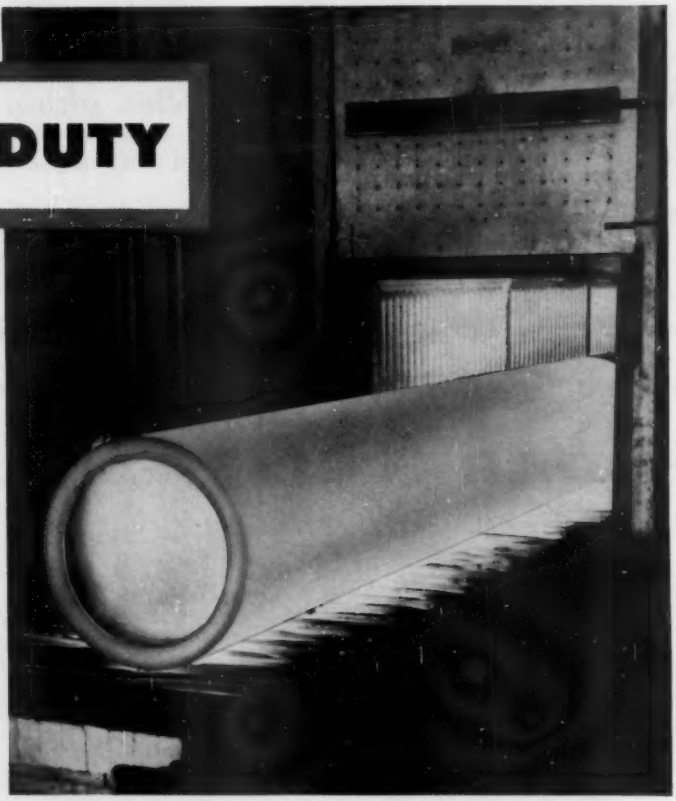
ASARCO

AMERICAN SMELTING AND REFINING COMPANY

Ask HEVI-DUTY

Sandusky Foundry and Machine Company did...

and now heat treats centrifugal castings of carbon and alloy steel at controlled, uniform temperatures up to 2050° F. with a



Sandusky Foundry and Machine Co. selected this Hevi-Duty Electric Car Bottom Furnace, rated at 2050° F. for their heat treating requirements. Casting being heat treated here weighs 13,700 lbs.

HEVI-DUTY CAR BOTTOM FURNACE

When your heat treating applications demand *quality production at uniform controlled temperatures*, Hevi-Duty can supply either electric or fuel-fired furnaces to meet your requirements.

For example: At Sandusky Foundry and Machine Co., Sandusky, Ohio, centrifugal steel castings up to 50 inches in diameter by 33 feet in length have been heat treated in a Hevi-Duty Electric Car Bottom Furnace. This furnace provides accurately controlled temperatures to 2050° F. in its 6′ x 6′ x 34′ long chamber. They use it to normalize, temper and anneal steel and stainless steel castings. Parts are either air cooled or water quenched.

The Hevi-Duty Car Bottom Furnace features five zones of temperature control, and by placing a dividing wall between the three forward and two rear zones, two separate loads with different temperature ranges can be treated simultaneously. Heating elements in side and end walls, ceiling, door and car bottom, plus three removable air-circulating fans help provide uniformity of temperature.

Whatever your particular heat treating application, there's a Hevi-Duty furnace designed to do the job. Car Bottom Furnaces are available with many arrangements and optional features—single or double end, retort type, controlled atmosphere, forced-air convection and others. Be sure to contact Hevi-Duty first for your heat processing equipment needs.

HEVI-DUTY

A DIVISION OF BPC BASIC PRODUCTS CORPORATION

ASK HEVI-DUTY
for more information on electric or fuel-fired heat treating furnaces. Car Bottom Furnaces are fully described in Bulletin 644R.

HEVI-DUTY ELECTRIC COMPANY, MILWAUKEE 1, WISCONSIN

Industrial Furnaces and Ovens, Electric and Fuel • Laboratory Furnaces • Dry Type Transformers • Constant Current Regulators

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My answer for fire-resistant fluids is... UCON Hydrolubes

Q. WHAT FLUID GIVES YOU EASY CONVERSION, GOOD PROTECTION, AND LOW LOSS?

Most hydraulic systems can be quickly and easily converted to fire-resistant UCON hydrolubes. Actual experience, in hundreds of industrial installations, shows that standard flushing and refilling procedures, involving a minimum of time and effort are sufficient.

The procedure generally followed in converting to a UCON hydrolube fluid from petroleum fluids is:

- Drain oil; remove sludge, deposits, and reservoir paint if affected by UCON hydrolubes.
- Flush with UCON hydrolube.
- Install a clean filter and replace worn parts. Repair leaking pipe joints.
- Operate at reduced pressure to insure proper lubrication of the hydraulic pump; then bring the system up to standard operating conditions.

No special packings and seals are required.

The same procedure is followed in replacing non-aqueous, fire-resistant fluids with UCON hydrolubes. But, all the old fluid must be first removed by flushing with petroleum hydraulic oil.

And, once installed, UCON hydrolubes have low loss.

UCON hydrolubes are the economical answer for fire-resistance in hydraulic fluids. Extensive field tests and more than 10 years of routine use in industrial hydraulic equipment prove this. UCON hydrolubes are approved for use by Factory Mutual Laboratories.

Get all the facts on UCON hydrolubes. Read the booklet, "UCON Hydrolubes Spell Safety." For your copy, ask a CARBIDE Technical Representative or write Union Carbide Chemicals Company, Room 328, Department J3, 30 East 42nd Street, New York 17, N. Y.

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UNION CARBIDE CHEMICALS COMPANY / DIVISION OF UNION CARBIDE CORPORATION

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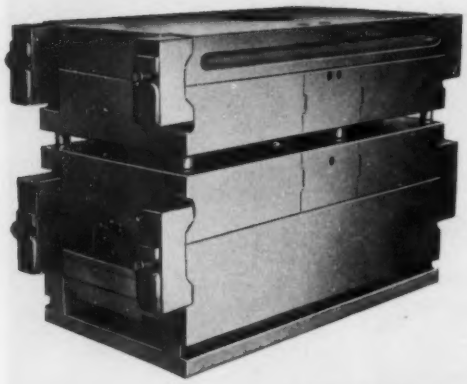
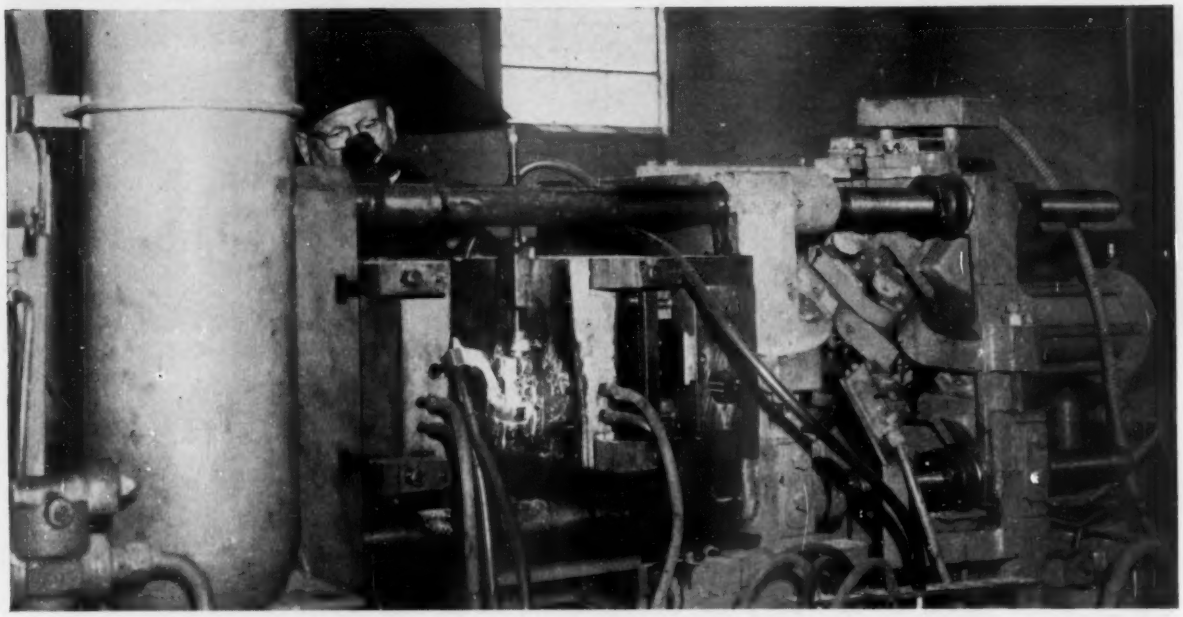


SAVE ON SHORT RUN DIE CASTINGS!

CHANGE DIES IN MINUTES!

With D-M-E Standard Unit Dies for Zinc or Aluminum Die Casting



Cut Die Costs and Save Time with Stock Replacement Units

DIE CHANGES that normally take 3 to 5 hours are done in minutes with D-M-E's Standard Unit Dies for zinc or aluminum die casting.

Standard interchangeable Replacement Units are *in stock* now to reduce your die costs and shorten delivery schedules.

D-M-E's Standard Unit Die assembly offers these unique features for added savings in production time and maintenance:

Construction permits complete freedom on *three sides* of the cavity for placement of cores or cooling lines; six sturdy leader pins and bushings provide accurate alignment and trouble-free performance; and "quick change" wedge clamps for positive positioning of each plate.

Standard Replacement Units are quickly positioned in the Unit Die Holder by a precision T-slot in the mating edge of the plates; there is no interference with the cavity layout.

Whether you require rack and pinion or automatic "bumper-type" ejection, D-M-E has a Standard Unit Die to fit the machine.

D-M-E Unit Die Holders are available for Standard 10" x 12" or 12" x 15" Replacement Units.

Start saving *now* on your short-run die-casting jobs with D-M-E Standard Unit Dies.

SEVEN BRANCHES FOR FASTER SERVICE

Write **TODAY** for Complete Specifications

DETROIT MOLD ENGINEERING COMPANY

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- D-M-E of CANADA, Inc., TORONTO, ONT.: 156 Norseman Ave.

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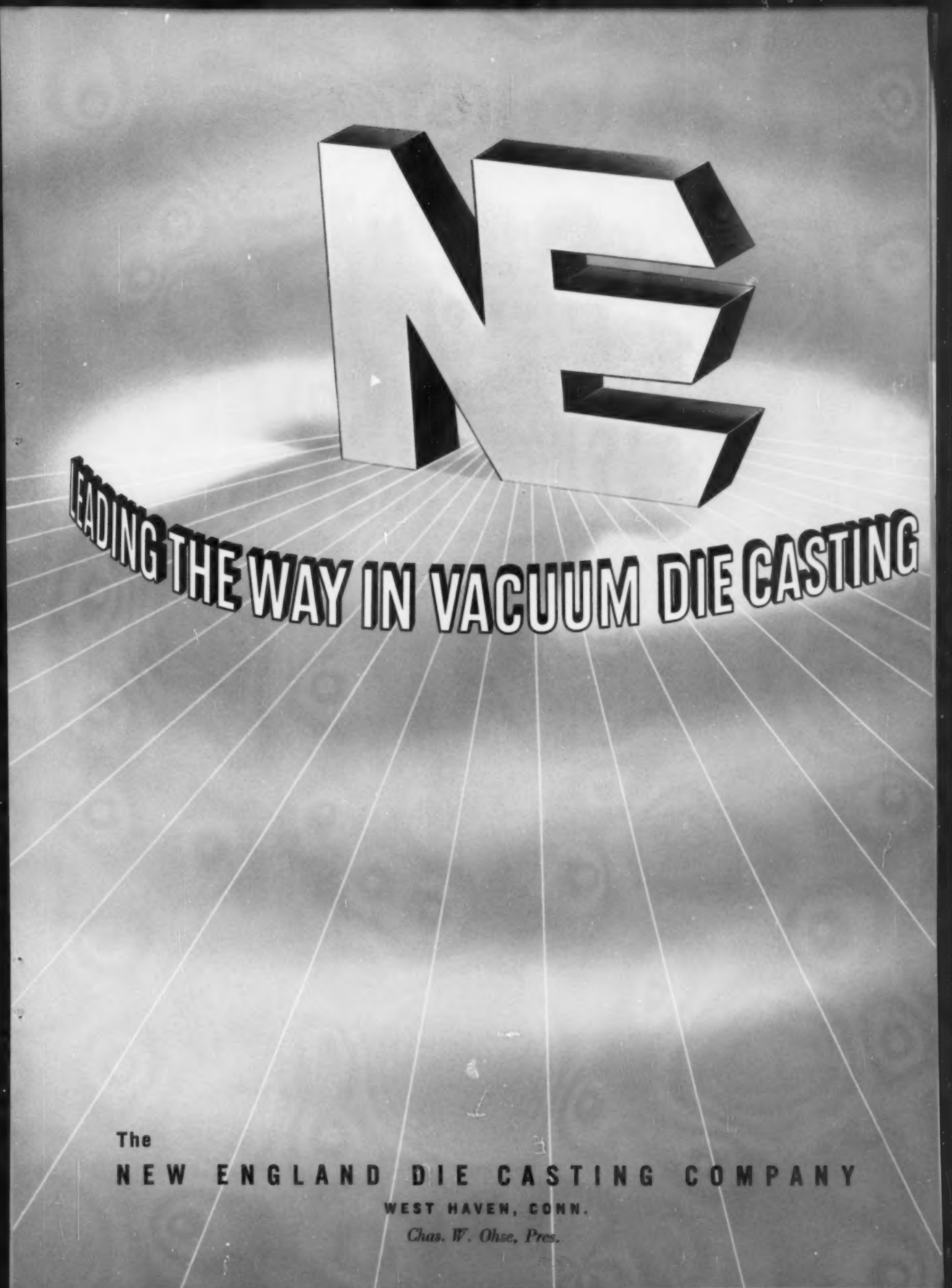

The

NEW ENGLAND DIE CASTING COMPANY

WEST HAVEN, CONN.

Chas. W. Ohse, Pres.

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NEW ENGLAND DIE CASTING CO.
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Redesigned from bar stock

EXTRUSION HAS SUPERIOR MECHANICAL PROPERTIES

SUPERIOR MECHANICAL PROPERTIES. That's the reason why the folks at ECO Engineering Co., chose an extruded impeller guide for their multi-purpose bronze displacement pump. Originally the pump was designed around a guide machined from bronze bar stock, (Figure 2). Two strikes were quickly placed against the machined guide: 1. It broke. 2. It was expensive to make.

The ECO Multi-Purpose Pump is a positive displacement pump for lubricating and non-lubricating fluids. It pumps from 0 to 10 gpm. at working pressures to 150 psig. The pumping action is unique, employing an eccentric motion that yields linear flows. Two synthetic rubber impellers are used to generate overlapping delivery.

The impeller guide serves a dual function. First, it is a structural member, helping to connect the two halves of the pump together (Figure 1a). Two diagonal holes are bored in each end of the guide for this purpose. Cap screws are run through the case and are tightened in the guide. Second, the guide serves a working function. It divides the pump into two chambers: Suction (inlet) and discharge (outlet). In operation the two impellers are guided in their movement by the tongue portion of the guide. This prevents the impellers from turning on their axis. There are two cycles to each rotation of the pump shaft, intake and discharge. As the pump operates there are disappropriate pressures between the discharge side, (high pressure), and the suction side, (low pressure). Naturally, the two sides alternate and there is constant intake and discharge taking place. This means that there is a continual change in pressure from 0 psi to 100 psi to 0 psi., etc. Since the two impellers revolve at standard motor speed, this action takes place 3,400 times per minute. It is this shock load that caused the machined guide to break. The same action places a great deal of wear on the tongue of the extruded impeller. But, replacement of the extruded impeller guide is due to the wear of the impellers motion upon it, not mechanical failure. Here's why the machined guide failed. During machining, residual work stresses would build up. Result: The machined guide would lack uniformity and would break in use.

To overcome these mechanical problems, the company switched to a guide extruded in naval bronze. There were several sound reasons for choosing an extrusion. First, the machinability of an extrusion is far superior. This is based on the simple fact that extrusions have uniform density. There are no hard and/or soft spots, often found in drawn or rolled bar stock. Second, with an extrusion, you can maintain an intricate, irregular shape — at far less variability than the same shape machined from bar stock. For example: The inverted grooves of the guide (Figure 1 b.) necessary for even flow of the liquid being pumped, are very difficult and costly to machine. But, the same grooves can be extruded, in the exact shape required, with no further machining required.

The switch to an extruded guide led to another advantage. The company could redesign the shape of the part and in turn minimize machining costs on the two halves of the pump case. Figure 2 is a cross-section of the machined guide. To cut costs only the inverted curves were machined, the top was left square. But to fit this rectangular shape into the top of the housing for a good structural bond, required that the case halves be broached and finished. This is an expensive operation. On the extruded guide the square top was changed to a radius. This turned the special broaching and finishing operation of the case into a simple drilling of a circular section. The redesign not only reduced machining, but also strengthened the joint between halves of the pump case.

The guides require special polishing in order to set up minimum drag in the flow areas. They are ground and polished to produce a mirror finish.

During extruding one tight tolerance is held. The overall height of the impeller guide has to be held to ±.001 to assure proper fitting of the working parts.

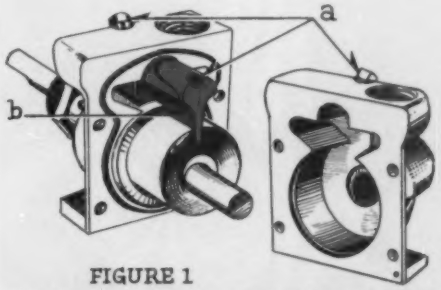


FIGURE 1

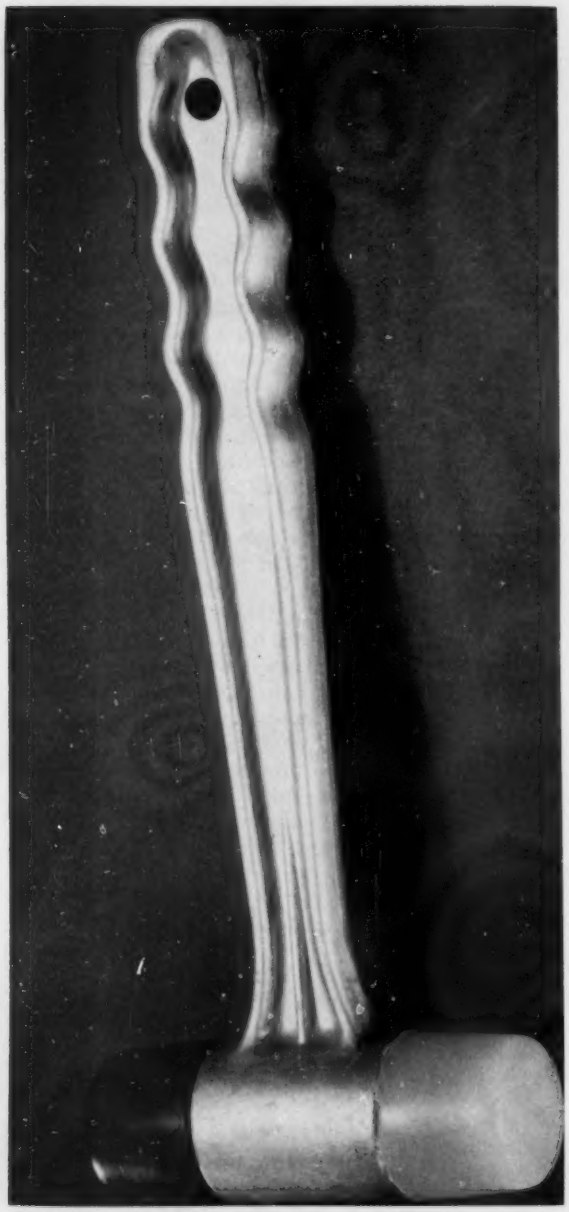
FIGURE 2

EXTRUDED BRASS impeller guide is shown in position, (Figure 1). Figure 2 shows cross-section of old machined guide.

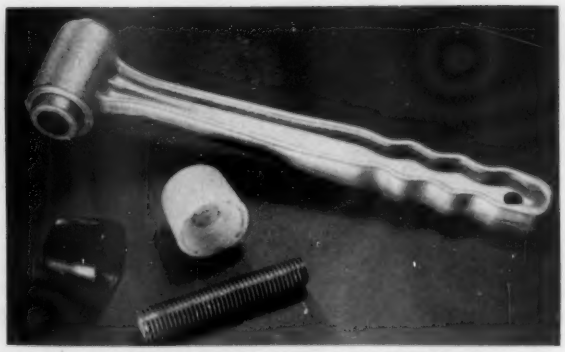
CIRCA 2500 B. C.

The materials have changed but the shape is the same for . . .

MAN'S OLDEST FROZEN DESIGN



CIRCA 1959 A. D.



CLEAN, SIMPLE design is the key-note to this hammer. Inexpensive to manufacture, simple to replace plastic heads.

IT PROBABLY hurt the stone-age man when he hit his stone-age finger with a stone-age hammer. But it's certain that the basic design of the hammer has changed just as little as the design of the finger.

There have, of course, been refinements . . .in the hammer, that is. Materials of construction are better, balance is probably better, and the business end comes, now, in a wide range of hardnesses; from cast and tempered steel to very soft fabric or rubber.

One major improvement has been made by Robert W. Hughes. After studying the hammer problem for some time, Hughes decided that a highly versatile tool would be an aluminum handled hammer with plastic tips. Such a hammer could be made double faced with interchangeable tips of, if desired, different hardnesses.

The plastic tips were no problem, but the handle was. Final decision was for a die cast aluminum handle. Why? Because:

- Only die casting could produce the handles in great enough quantities at a low enough manufacturing cost.
- Only die casting could make a handle with a good surface finish without second operations.
- Only die casting could produce the handle with the required physical properties, with thin sections to get light weight and proper balance.
- Only die casting could produce a handle which requires no machining after trimming.
- Only die casting could produce a handle with sharp, clear lettering cast in.

With automatic die casting machines . . .

WILL MACHINE OPERATORS BECOME INSPECTORS?

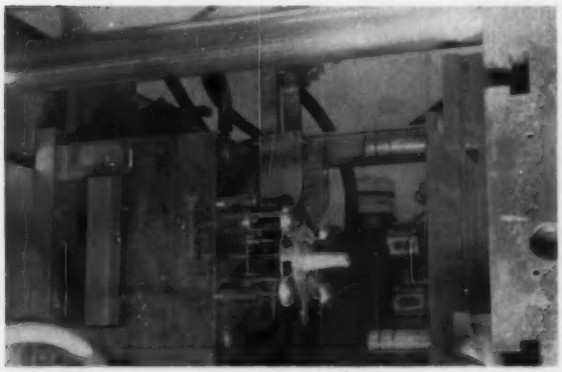
WANT TO MAKE an inspector out of your die casting machine operator? It's possible with the new developments which have come out of the Cleveland Automatic Machine Co. laboratories.

The laboratory machine is a 50-ton locking pressure, hot chamber unit. It has been equipped with low pressure die closing and automatic stripper, as well as automatic die lubrication. Naturally, an entirely new and different cycling system had to be built into the machine. Here's a typical operation sequence:

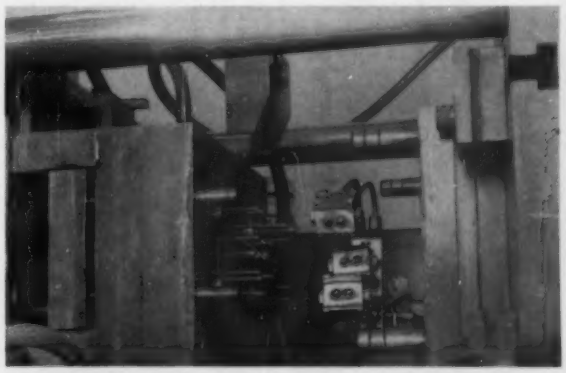
The cycle starts with low pressure — 300 psi — closing the die. When the ejector half has moved almost closed, the pressure is dropped to 150 psi to prevent die locking in case there's an obstruction. If the die faces are clean, the machine closes and a high pressure of 1000 psi oil locks the die halves. (Note: If any flash more than .008" thick is on the die face, the machine opens and shuts off.) The shot is made, the machine opens, and the casting is bumped loose by a bumper plate. The stripper then comes down from above the die blocks, strips the casting, and drops it into a water quench. In the water tank, the casting falls onto a conveyor which takes it out of the machine and delivers it to any desired conveyor system. In the meantime, after the stripper has returned to its top position, an automatic lubricator enters the die opening and sprays the cavity. The lubricator retracts and the entire cycle repeats.

As the machine is now operating, a four-cavity die is being used and the machine cycles at 500 shots.

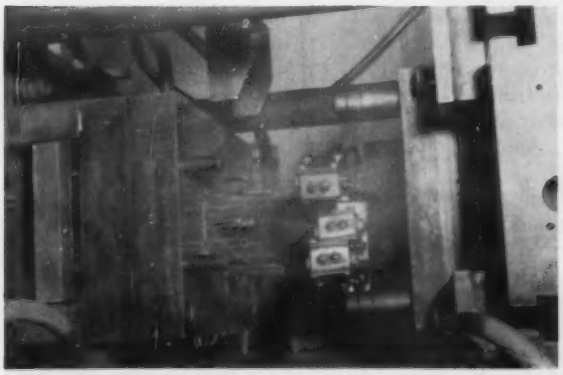
Since the machine operator has only to watch for malfunctioning — for example, a machine not closing due to minute flash — and to maintain the metal level in the zinc pots, it is possible for one man to oversee at least six machines, and do routine inspection.



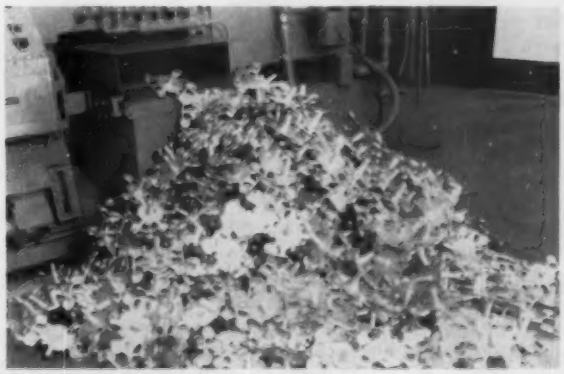
THE STRIPPER moves down to strip the casting and drop it into the water tank. Then . . .



AUTOMATIC lubricator heads move into the die opening on any predetermined cycle and . . .



SPRAY LUBRICANT on either or both of the die halves. The cycle is now ready to repeat.



GATES OF CASTINGS ready for trimming. The discharge can be tied into a conveyor system if desired.

DESIGN FOR
PERMANENT MOLD CASTINGS

For maximum rigidity and minimum weight . . .

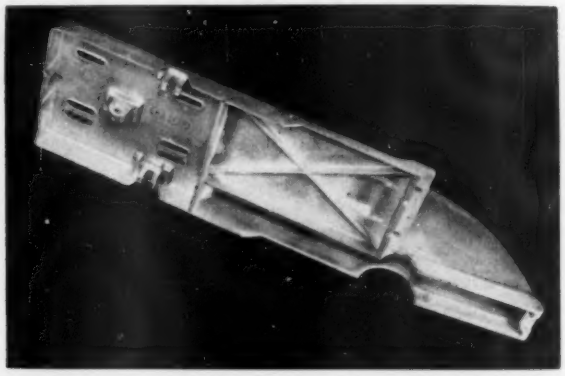
CHANGE WELDMENTS TO CASTINGS

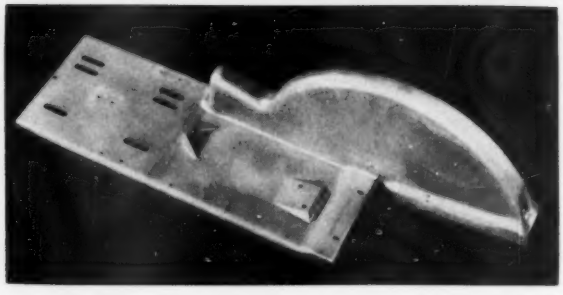
THE MASONRY SAW produced by the Robert G. Evans Company of Kansas City is used in the building trades to cut concrete block, brick, tile, etc. This machine consists of a head, which carries the blade and a blade guard, and the spindle for mounting the blade as well as the electric motor and necessary belting and belt guard. A carriage is provided to roll back and forth under the blade in order to make successive cuts through a block or brick. These two basic units are carried upon a framework to hold them in proper relative position.

Early units, that is the frame, saw-head, and the carriage, were fabricated of steel. This method required a great many fixtures, jigs, etc. in order to assemble the component parts and weld them together.

To produce the machines more economically and to gain rigidity, the Evans Co. investigated the use of castings. They contacted Stahl Specialty Co. at Kingsville, Missouri, a foundry specializing in permanent mold aluminum castings. By combining the know-how of the Evans Co. in producing masonry saws and the know-how of Stahl Specialty Co. in producing

STRENGTH & RIGIDITY, the two essential factors in this blade guard and motor mount. Rigidity comes with a cast structure and strength from the alloy used and the well designed ribbing.





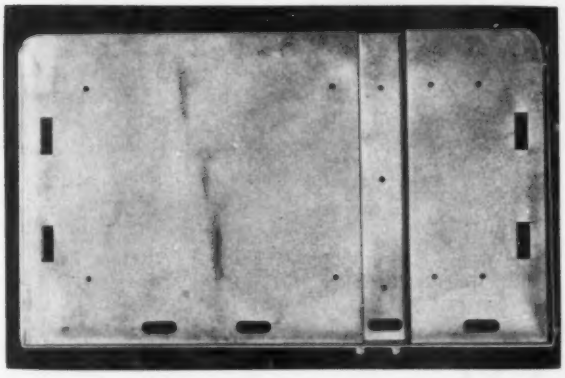
castings, castings for head, carriage and belt guard were designed. Few changes were made in outward appearance in converting to castings. However, the flexibility of design inherent in the permanent mold process allowed the use of rounded corners and fillets where desirable for appearance purposes. Also, it was possible to add ribbing and other stiffening members underneath to achieve rigidity, and it was possible to cast in the trade name "Target" in large letters on the belt guard.

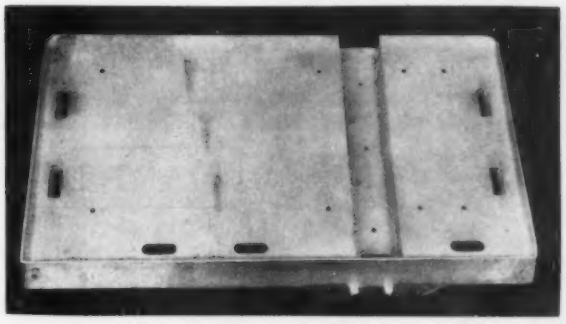
The improved rigidity of the head casting was highly important. With the motor as large as 2HP mounted on the rear end, it was essential that all parts of the head move as a unit. The steel fabrication needed to be made from a number of pieces and these pieces welded together. There was always the element of error creeping in to the point where not all parts were in proper alignment originally. Then, as welding stresses were relieved by aging, warping could occur and throw the blade out of alignment with the path of travel.

Another important factor was weight, since the machine is portable. The head and table are removable from the framework for transportation. With the aluminum head it is possible for one man to transport even that part of the assembly quite easily.

Another consideration was corrosion resistance. The machine is equipped with a pump for using water to control dust from the sawing operation, so a high degree of corrosion resistance was important. Because of the abrasive nature of slurry from cutting, any permanent rust protection of steel parts was quite difficult.

ACCURACY is a basic requirement on the saw table. Warpage can not be tolerated. Stress free castings made in permanent molds are the best answer.





OPERATOR'S LIVES may depend on adequate guards over belts and blade. Aluminum castings are fail safe.

Still another advantage not originally considered was that the aluminum casting deadens vibration of the sawing operation. The result is quieter operation.

And, of course, there's the cost factor. Since the steel parts had to be made from a number of pieces, and since many holes, etc. had to be drilled or punched, and several forming operation take place before welding, the weldment represented a considerable amount of labor in fabrication. The permanent mold cast aluminum parts are cast complete with most holes, even including holes as small as .070 for name plate drive rivets, and are virtually complete when cast.

One of the disadvantages of the permanent mold aluminum casting which was not determined before production models were tested is that aluminum is not abrasion resistant to the particles of abrasive thrown off by the perifery of the cutting wheel. This abrasion caused some heads to wear through and water was thrown through the head. This problem however has been overcome by cementing a rubber strip inside the head. Through the use of this rubber strip, it is possible to make the cast heads much more abrasion resistance than the steel heads.

One of the problems in the design of the head was need for a tough alloy on the yokes. These are the parts which drop over the pivot bar in the rear. This problem was solved by using Amalloy inserts in the head, which is made of #43 Alloy. The Amalloy inserts are not actually bonded to the #43 Alloy, but are held by a mechanical clamping action, due to shrinkage of the aluminum.

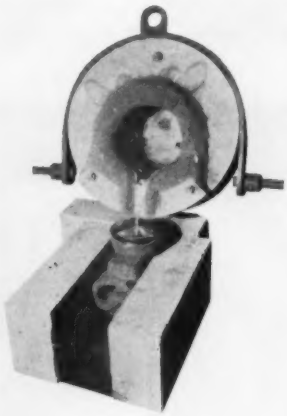
The Amalloy parts are made in a separate mold, of course, and then used as inserts in the large casting. On present production, small steel inserts are used in the Amalloy inserts. Therefore, we have a steel insert in an Amalloy casting which in turn is an insert in the aluminum casting.

Finishing of castings is much the same as for the weldment, except that a special aluminum primer is used before painting for better adherence. Also, after painting, the belt guard and the trade name "Target" are ground to highlight the letters on the blue background.

STRONG & PORTABLE thanks to proper use of aluminum permanent mold castings. The cast parts also give a high safety factor and good abrasion resistance.

DESIGN FOR
INVESTMENT CASTINGS

PART III



Why Pointer Tool uses Glascast

INVESTMENT CASTING IN SHELL MOLDS

BY S. A. MINIEA, JR., *Pres., Pointer Tool Co., Inc.*

WE'RE USING the Glascast process in our new Truecast Div. because of lower equipment costs, faster production, and reduced fuel costs. We saved 25 to 30% on initial equipment costs, and can melt-out and cure in only 20 minutes. The investment process takes 24 hours.

We established the Truecast Div. to make precision castings of intricate parts, held within tolerances of ± .005. With the Glascast process, we can consistently hold surface finishes to 60 micro-inches after sand-blasting. Exacting curved surfaces, undercuts, square holes, or surfaces which usually require hours of milling can be economically cast in. In fact, the more complicated a machine part, the easier it is to sell a customer on casting. Manufacturing costs of some items are 50 to 55% less than the machine milling method, and delivery time is cut by a third.

We can produce a die in one to two weeks, and can fill a normal casting order in another week. The Glascast molds are flash-fired for 15 to 20 minutes, while melting out and curing with the investment process takes about 24 hours. Because of this, our daily production is handled with only three furnaces instead of six to eight, and labor requirements are cut one-third.

We can offer a wider variety of metals, and we can maintain top quality in repetitive parts with fine detail. We cast any metal from aluminum to the Star J series of Stellite, at pouring temperatures from 1200 to 3800°F. We've had practically no breakthroughs or cracked molds. The largest parts we've made are a wire-weaving shuttle weighing 6 lb, and a 12″-diameter impeller with 180 veins which we cast two at

MADE IN GLASCAST molds, these investment cast parts all showed real savings in machining. Good surface, close tolerances, and faithful reproduction of detail are features of the process.

a time. We probably could go as high as 24 lb in an 18 to 20″ diameter.

The low coefficient of thermal expansion in the Glascast mold (less than .00000047 in./in./°F) makes close tolerances possible. We use Corning's Glascast 58 powder in an A-10 slurry for dipping the wax pattern. Working room temperature is about 72°F. When the pattern surface is tacky, we sprinkle the first coat of fine mesh grain (35 to 80 mesh) through a common household strainer. After this has dried for 30 to 45 minutes, we apply a second coat of powder. Generally, we use four or five coats, depending on the strength needed.

The fine material in the first coat creates the smooth surface of the casting, while the coarser grains (10 to 35 mesh) in succeeding coats give strength to the shell. The coatings vary from 1/8 to 3/16″ thick. Intricate cores are made with the finer grains to sharply define the lines and crevices of the mold.

Thoroughly dried wax-filled molds are fired for about 20 minutes at 1830°F. This melts the wax and sinters the mold. The furnace temperature is relatively low to create a softer mold which can be more easily broken away from the finished casting. The sintered mold, free of wax, can be poured immediately or stored indefinitely. For alloys poured at 1500°F or higher, the stored molds must be preheated so the metal can be poured at a lower temperature to produce a finer grain. In pouring steel, for example, the mold should be about 1000°F cooler than the metal. A preheated shell also fills out better.

Tolerances are held to ± .005 in normal production, but we have held them on special jobs like radar wave guides to ± .002. This virtually eliminates milling, except in very unusual cases. Such exacting work once meant milling the whole piece, starting with a solid piece of metal. We are now able to satisfy our customers and show 50 to 55% reduction in part costs, which sometimes means thousands of dollars on a single order.

For prototype machines, the relatively low cost of this process permits us to make only a few parts without using expensive dies.

NOTE: This is the concluding part of a three-part report on the use of shell molds for investment casting. Part I (Nov., page 66) covered silicate shells; Part II (Dec., page 34) described alumina base ceramic shells.

MAKING THE MOLD

A WAX pattern is made in a steel mold, the waxes treed and then dipped fine slurry. By sifting coarse material on the wet surface the mold is built up. When thick enough, it is fired at 1830°F and is then ready for pouring. If necessary it can be cooled and stored indefinitely.

Powder metallurgy develops a . . .

NEW CUTTING TOOL COMPOSITION

CONTAINING 80% titanium carbide, 10% nickel, and 10% molybdenum, a new cerment cutting tool, made by powder metallurgy, has been developed by the Scientific Laboratory of the Ford Motor Co.

"This development," said Dr. Michael Ference, Jr., director of the laboratory, "marks an important forward step in freeing the United States from dependence on imported and highly strategic tungsten."

The new tool material is a very fine grained material with a uniform dispersion of titanium carbide through the nickel-molybdenum matrix. The use of nickel alone resulted in excessive grain growth of the carbide during sintering. By the addition of molybdenum, uniform dispersions and retention of the initial fine carbide grain size is secured. The result is improved hardness, strength, and impact resistance.

But proof of superiority is in cutting tests. In one standard machinability test carried to a 0.030 inch wear land on tool bits, tungsten carbide tools lasted 37 minutes; the new titanium carbide tool bit 14 hours-50 minutes (890 minutes). In terms of metal cut: 85 lbs. for tungsten carbide, over 2000 lbs. for the titanium carbide.

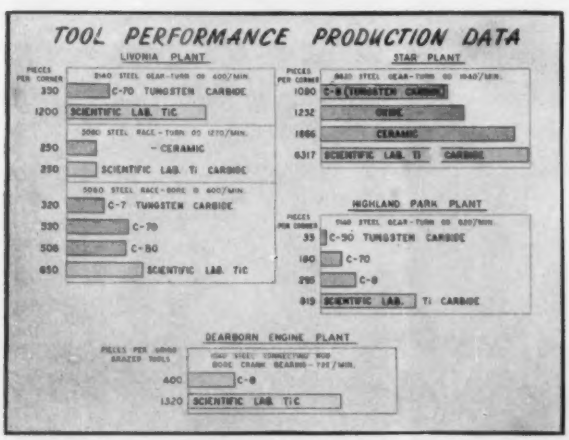
Titanium carbide was tested against two commercial ceramic tools and a C-8 tungsten carbide tool. The operation was to finish-turn an 8620 forged steel gear blank, Bhn 170-207, at 1040 sfm using 0.013" feed and 0.010" cutting depth. The results:

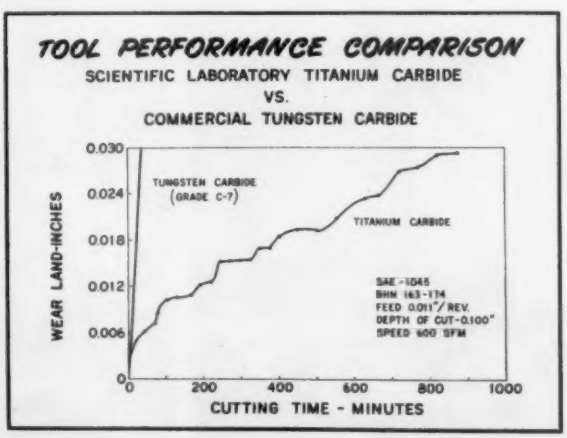
C-8 tungsten carbide cut .....1090 pieces
One ceramic tool cut .....1232 pieces
One ceramic tool cut .....1666 pieces
Titanium carbide cut .....6317 pieces

In another machinability test, C-70 tungsten carbide was compared with titanium carbide on the semi-finish turning of a 5140 forged gear blank, Bhn 179-217, at 400 sfm, with a 0.017" feed and 0.015" cut.

C-70 tungsten carbide cut ..350 pieces per corner
Titanium carbide cut ....1200 pieces per corner

All production factors have not yet been evaluated, but present indications are that titanium carbide costs will be competitive with both ceramic tools and tungsten carbide.





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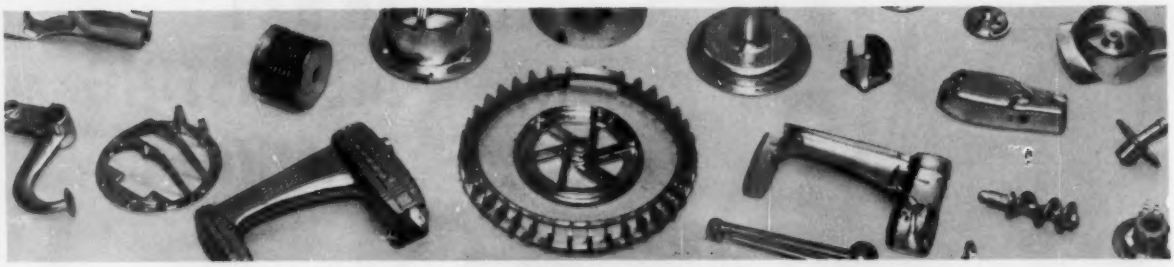
have served America's leading manufacturers

—from Argus to Zenith



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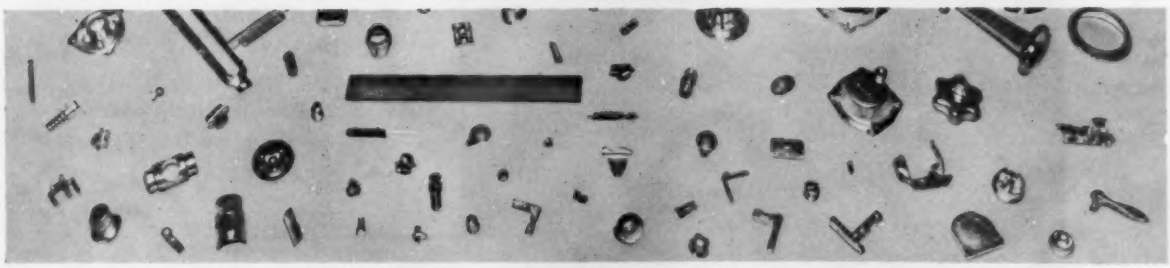
—from Automobiles to Zippers



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DOLLIN Zinc & Aluminum DIE-CASTINGS

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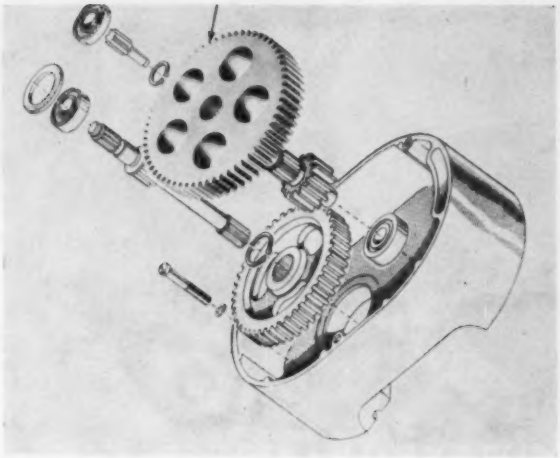
DESIGN FOR THE

PMM PROCESSES

SINTERINGS IN POWER TRANSMISSION



SAVE MONEY and get the parts you need with all the required strength by using sinterings.

A hoist company found out they could do that when they switched from a cut steel gear to a powdered iron one. The powder mixture that AMPLEX DIV., CHRYSLER CORP. uses to make the gear is their "Oilite" no. 9. This is a mixture of iron and copper powders, pressed and sintered to give the mechanical strength needed for the job. The sintered gear is shown in the illustration by the arrow.

The sintered gear transmits power smoothly and quietly from the motor to the lift wheel. The sintered gear has a better surface finish than the old cut gears had, it requires absolutely no machining and there's a saving of 53¢ on every gear.

For standards or specials . . .

DIE CAST MOTOR HOUSINGS

HIDDEN AWAY where they can't be seen are thousands of die cast components. They're there because nothing else will do the job as well and at as low a manufacturing cost. Zinc, aluminum, and magnesium are all used for these die cast components.

Photo courtesy American Die Casting Institute

The end caps shown go on a special motor used in an axle shifting mechanism. Why are they die cast? Because only die casting can give the required complexity of shape and dimensional accuracy, without the need for elaborate machining.

These zinc alloy die castings are almost ready for use when received from the casting producer. The natural toughness of the alloy assures complete protection of the motor in rough service. Add to this the exact reproducibility from casting to casting so that the parts are always completely interchangeable.

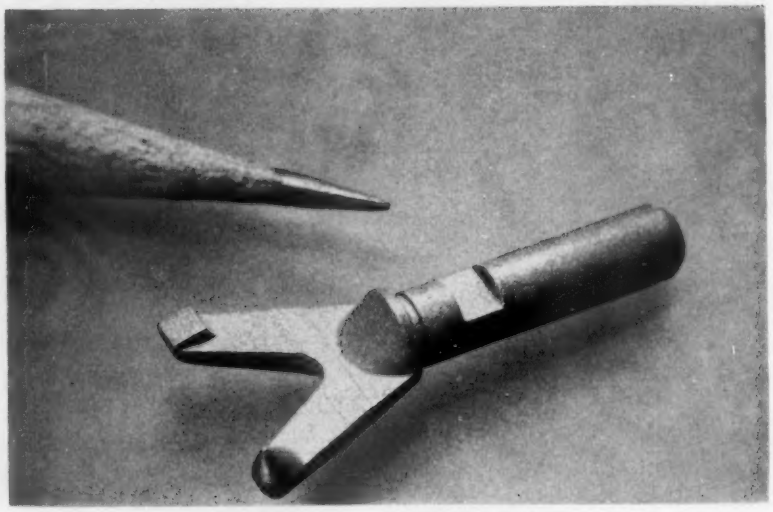
DESIGN FOR THE PMM PROCESSES

CLIPPER CASTING SHEARS COSTS

EVER CLIP COSTS with a wool clipper? One manufacturer did it by investment casting a component for sheep shearing equipment. The part, a fork yoke which oscillates a cutting blade, formerly was forged of C1117 steel, then went through a series of machining operations.

By investment casting the yoke in chrome-nickel-moly steel, these benefits were realized:

- Costs were cut 20 percent.
- The part has greater fatigue strength.
- Several key dimensions are held within a total variation of .003 to .004 in.
- The only secondary operation required is centerless grinding of a shaft. Yoke made by CASTING ENGINEERS, INC.

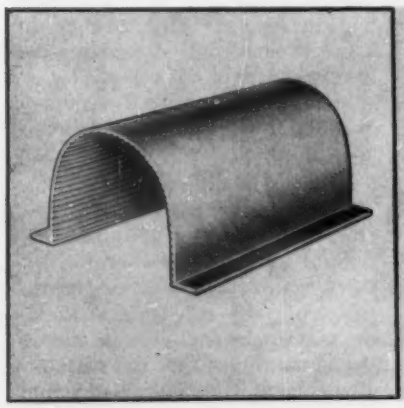


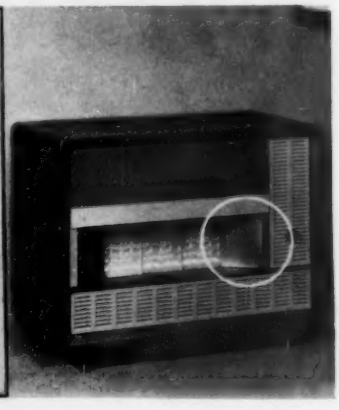
BIG EXTRUSIONS FROM SMALL DIES

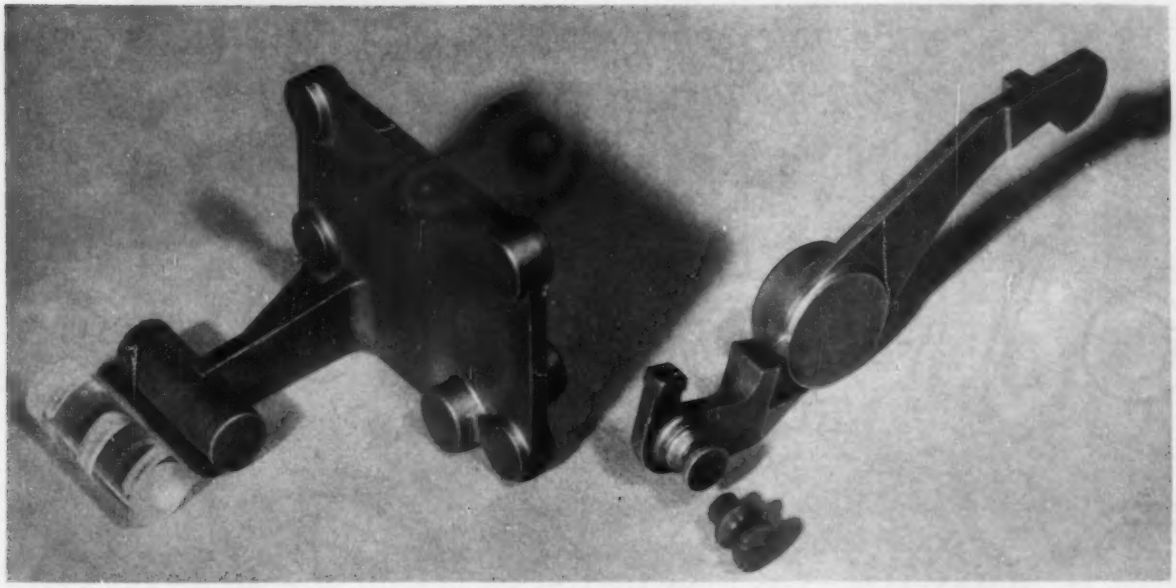
DO YOU NEED wide, thin section extrusions? Maybe they can be made on a small press to avoid too great a reduction ratio. The hearthside (circled) on the radiant gas heater was just such a case. The piece is 7 in. wide and only 0.050 in. thick. Most extruders thought it had to be made from an 8 in. billet. But the reduction ratio from such a billet was too high and it couldn't be produced.

GENERAL EXTRUSIONS, INC. thought differently. They designed the part as a semi-circular extrusion as shown (below left). Then the part was extruded from a 5 in. billet. After extruding the piece was flattened, cut to length, notched and bent. Mounting holes were punched as a final operation before anodizing. The finish is a clear gold anodize.

Costs were cut all along the line through the use of the smaller extrusion press. The die costs, alone, were less than half.







A COMBINATION of plaster mold and investment casting makes possible the economic production of parts previously uncastable except at high costs for machining and finishing.

By combining two older processes, there is . . .

A NEW HORIZON FOR CASTING DESIGN

DESIGN POSSIBILITIES of both plaster mold casting and investment casting are well known. While the two processes are essentially non-competitive in the type of casting produced, they have one common meeting ground. This is during mold preparation.

In plaster mold casting, a pattern part is placed in the flask, one part in the cope and the other in the drag, a plaster mixture poured around the pattern and allowed to set. The pattern is then removed from the mold and the mold removed from the flask. *The mold is then fired to secure the chemical and crystallographic changes in the plaster which are essential. Metal is poured into the mold while it is still hot.*

An investment casting, a wax or plastic pattern is coated with mold material. *After the mold is set, the entire assembly of mold and pattern is fired to burn out the wax or plaster and to secure the chemical and crystallographic changes in the mold material which are essential. The metal is poured into the mold while it is still hot.*

The similarity is apparent. Both types of molds must be fired at a rather high temperature and in both cases the metal is poured into the hot mold. So why not combine the two mold making techniques? What would be the advantages? Are there disadvantages?

One major disadvantage of the plaster mold casting process is the need for a rigid pattern which must be removed from the mold prior to firing. This automatically eliminates many designs with undercuts, re-entrant angles, and curved and skewed holes.

Investment casting can overcome all these difficulties. It is only necessary that the molten wax or plastic have an adequate drain. Investment casting is, however, somewhat more expensive than plaster mold casting.

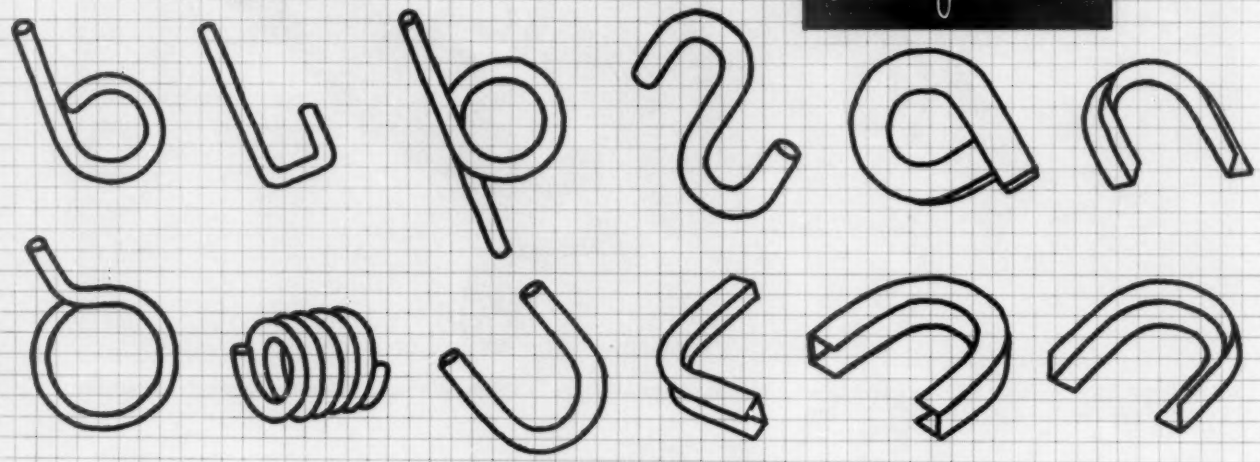
The advantages of combining the two processes are clear. For short runs, prototypes, and similar cases where plaster mold casting is indicated, wax or plastic pattern segments can be used to form those portions of the mold which cannot be formed by the normal brass pattern. When the metal pattern is removed from the mold, the disposable pattern pieces will remain in place. During firing of the plaster mold, at over 1000° F, the wax or plastic will melt out, leaving the desired cavity.

This combined technique is now in use by Atlantic Casting & Engineering Co. The two castings shown in the illustration could not have been made by normal plaster mold casting methods. However, by using the plastic or wax pattern segments shown, the desired castings were produced.

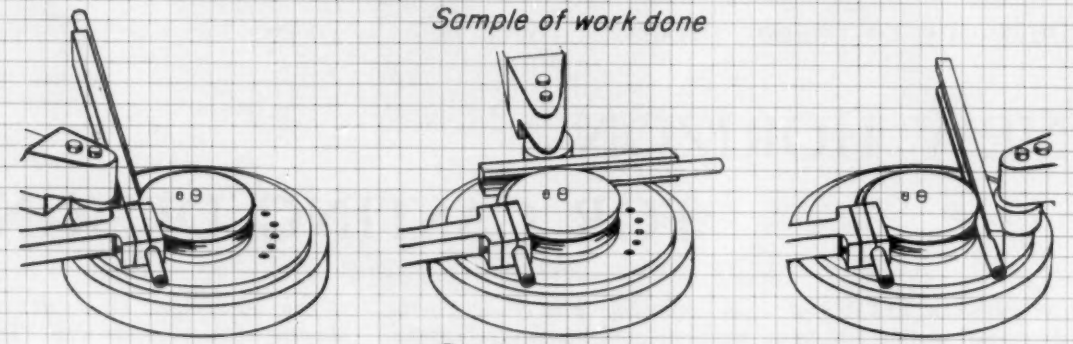
If production costs are favorable, this method of mold making can be of great importance.

Bend extrusions to get complex shapes from simple ones

use these PMM **Design Tips** for lower costs -better products

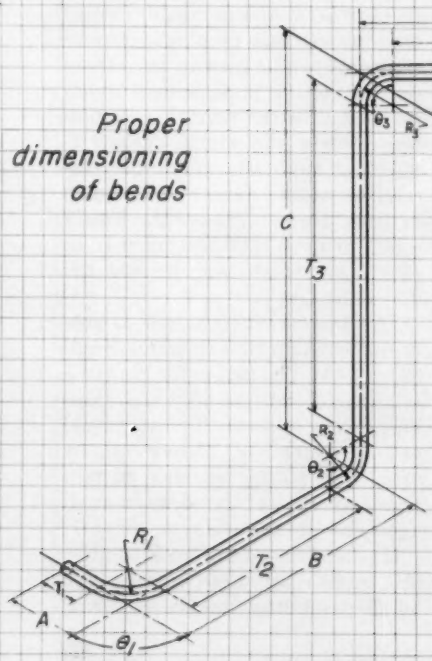


Sample of work done

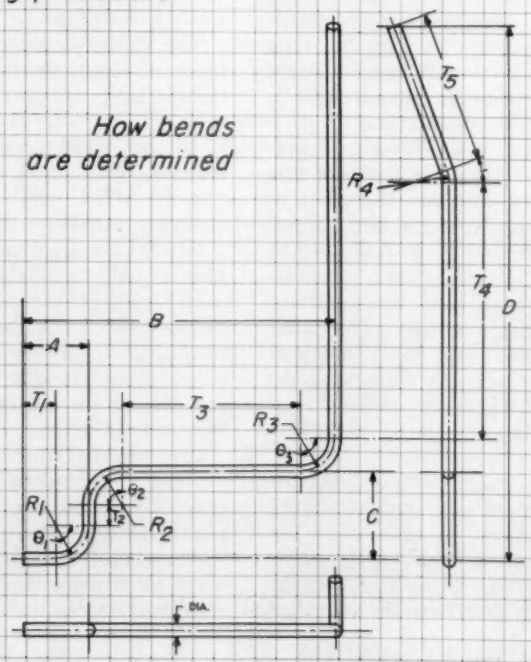


Bending procedure

Proper dimensioning of bends



How bends are determined



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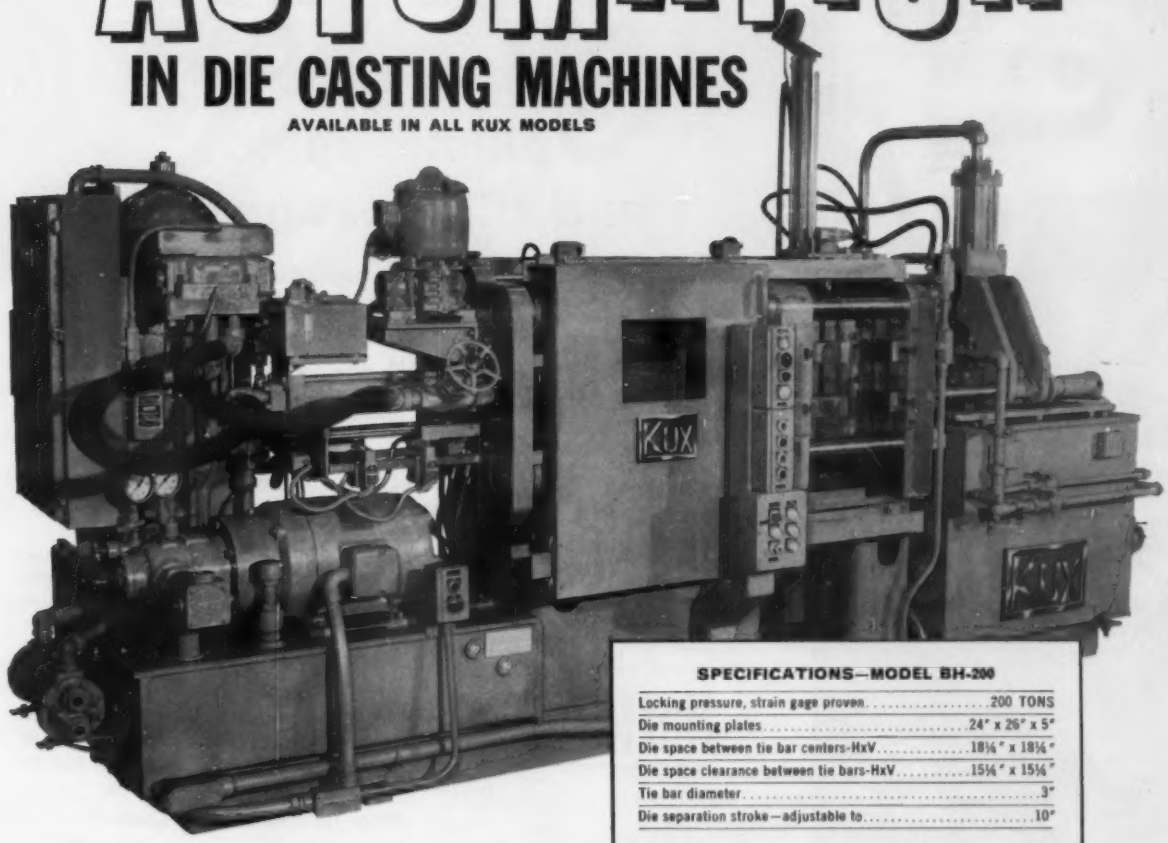

SPECIFICATIONS—MODEL BH-200

Locking pressure, strain gage proven	200 TONS
Die mounting plates	24" x 26" x 5"
Die space between tie bar centers-HxV	18¼" x 18¼"
Die space clearance between tie bars-HxV	15¼" x 15¼"
Tie bar diameter	3"
Die separation stroke—adjustable to	10"

Up to 900 free cycles per hour...
500 to 700 casting cycles per hour } AUTOMATICALLY — CONTINUOUSLY

You're looking at the new KUX Model BH200—the 200-ton strain gage proven hot chamber die casting machine, which will continuously produce vast quantities of hardware finish castings with minimum maintenance and down time. Automatic operating mechanism permits a cycle with a full 10" of die movement and 6" of metal injection stroke in 4 seconds. A 6¼ lb. zinc shot can be produced in this heavy duty machine at 1800 PSI injection pressure. Sensing safeties retract the die plate and prevent recycling of machine if there is flash on the die surfaces.

Incorporated into this machine cycling mechanism is a low pressure approach of the moveable die plate, flash sensing switches, air jets for cleaning die faces, casting sweep arm, and die lubricating unit with adjustable interval timing. Also available in cold chamber models for casting aluminum with KUX "AUTO-FEED" system of vacuum die casting.

ADDITIONAL FEATURES in the 28 all-new strain gage proven KUX models are the revolutionary "VAC-U-DIE" and "AUTO-FEED" systems of vacuum die casting—motorized die height adjustment mechanism—and the patented KUX injection pressure multiplier for cold chamber models with injection pressures up to 36,000 PSI and plunger speeds up to 12,000 inches per minute.

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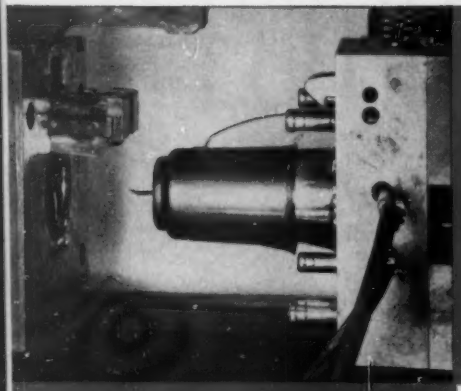
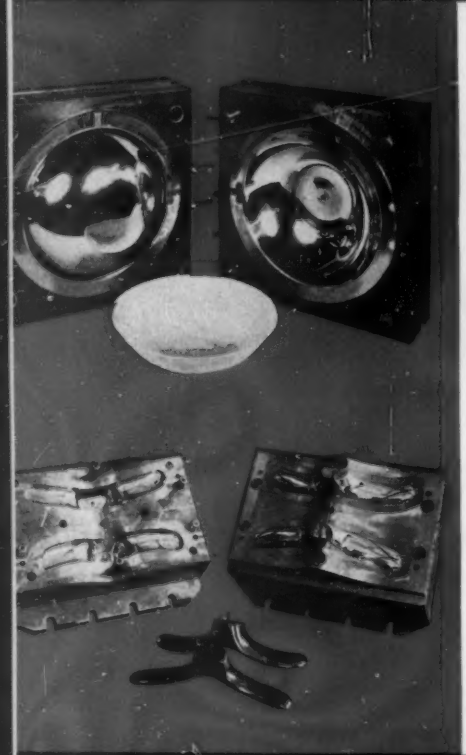


DIE STEELS

for
plastic molds
and die casting dies



MC The Mold and Cavity die steel made with particular care to permit blemish-free, highly finished surfaces. Furnished heat treated to 300 Brinell or annealed. Very deep hardening —uniform throughout large sections. Very low movement when oil quenched. For lower finishing costs and longer die life, use MC!

Speed-Cut Free-machining at 300 Brinell. Choose Speed-Cut for economy in producing backing plates, cavity plates, spacer blocks and other plastic die parts. And when you must avoid *all* movement, machine Speed-Cut after hardening—with ease!

Hotform The original 5% chromium, most widely-used die casting die steel. Will withstand extremes of service conditions—tough, strong, highly resistant to thermal shock.

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Vanadium-Alloys Steel Company

LATROBE, PENNSYLVANIA

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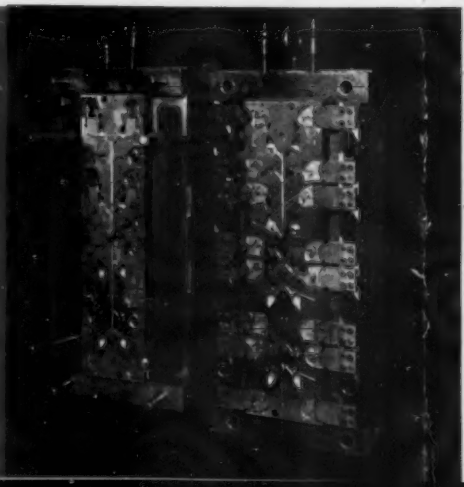

PMM

The specialized finishing methods, equipment and materials used to machine, assemble, surface condition or surface coat precision metal molded parts are presented here. This includes all secondary operations which convert a raw casting to a finished product.

Finishing Section

THE ECONOMIES OF VACUUM METALLIZING

BY MORTON B. GILBERT, *Vacuum Metallurgical Div., F. J. Stokes Corp.*

VACUUM PLATING has become a vigorous competitor in the finishing field since the introduction of improved lacquers which utilize synthetic enamel resins for the base and protective coatings. This process now offers brilliant, lasting, pit-resistant finishes on die cast aluminum and zinc hardware details and trim at low cost.

The new vacuum metallized coatings perform favorably in comparison with chrome plate on zinc die castings. Tests of resistance to salt spray rate vacuum metallized coatings at up to 500 hours, and weatherometer tests show an endurance of up to 1000 hours without loss of adhesion or perceptible discoloration.

Even more important is the economy. Many jobs can be done by vacuum plating at one-third to one-fourth the cost of electroplating, while appearance is at least equal and often better. And, vacuum plating of aluminum die castings is as simple as zinc.

HOW IT'S DONE

Mounted on suitable racks, the zinc or aluminum die castings are first vapor degreased to free surfaces of all foreign matter. Still on the same racks, the parts are next coated with carefully-balanced formulations which could consist of melamines, ureas, epoxies, phenolics, or a combination of these resins. Spray, dip, or flow-coating methods are used, depending on the design of the parts. Electrostatic spray is used on simple shapes. Other designs, especially where dip or flow coating may result in trapping enamel in pockets, require electrostatic de-tearing, or slow spinning of the racks during a drip-off dry.

Typical cure periods for base-coated parts are 30 minutes at about 300° F to produce a hard, glossy finish. Porous, scratched, or other rough surfaces may

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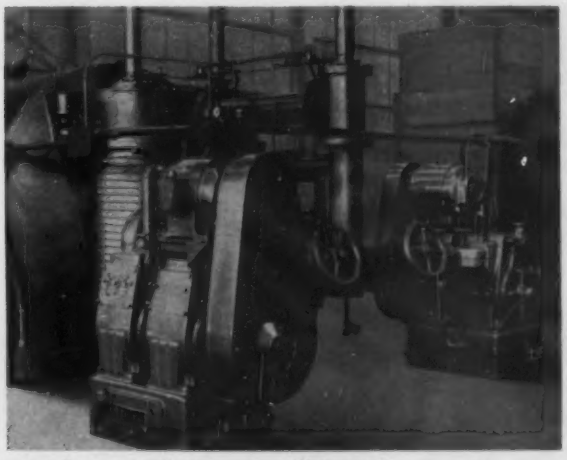
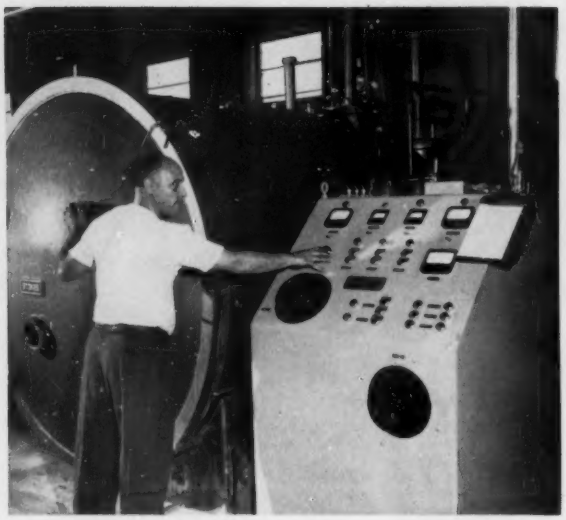
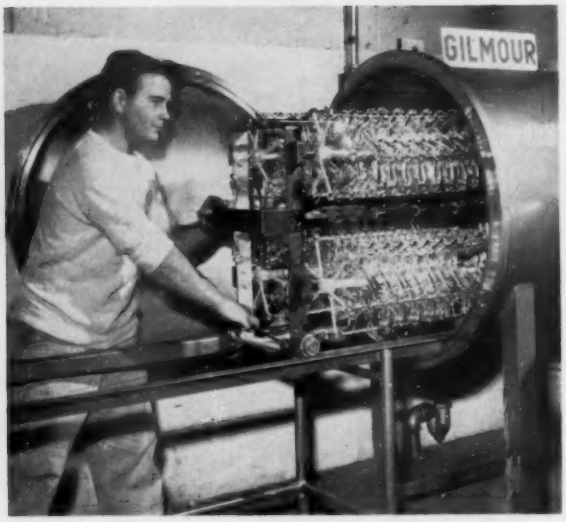


THE VACUUM tank and associated pumping equipment for a typical vacuum metallizing unit.



THE CONTROL CONSOLE for a vacuum metallizing unit.



PARTS OF SPIDERS go into the vacuum chamber for metallizing.

require a second coat of enamel in order to achieve the desired continuous, smooth, base coating which will give the best finish.

The racks of parts are next mounted on a work carriage and rolled into the chamber of the vacuum metallizing unit. Provision is usually made for rotating the racks mechanically. An array of tungsten filaments extends axially through the center of the chamber, and a number of small U-shaped strips or staples of high-purity aluminum are hung on these filaments. Aluminum is most frequently used because of its ease of evaporation, low cost, and the high lustre it gives to the work.

The door to the vacuum chamber is then sealed shut and vacuum pump-down begins. Rough pumping with a mechanical pump rapidly lowers the pressure to a few hundred microns of mercury. Next, the oil-diffusion and booster pumps are cut into the pumping circuit. With their massive pumping speeds, pressure within the chamber soon drops to 0.5 micron, and is indicated by an accurate ionization-type vacuum gage.

Electrical current is next turned on to heat the filaments. The aluminum melts on the hot tungsten at about 1200° F, wetting the filaments. In this condition, it is poised for evaporation. Power is suddenly increased, heating the filaments to incandescence, and the aluminum vaporizes.

Under conditions of high vacuum, there is virtually no atmospheric obstruction, so the aluminum vapor flashes off in a straight path, condensing on the cooler surfaces of the work. By revolving the reels, the work is coated uniformly all over.

The chamber is then opened, the racks are removed, and the work is given a final protective coat, usually using the same baking enamel used for the base coat. Stains or dyes of various shades may be applied during the final coating cycle to stimulate any metallic color or anodized finish.

While vacuum metallizing is not new, until the last year or two its use was largely restricted to novelty decorative finishes for plastic costume jewelry, toys, and paper products. The two significant refinements in the process that have now made vacuum metallizing an important industrial finishing tool are (1) the development of vacuum pumping equipment with greatly increased pumping capacity, providing more rapid pump-down and shorter cycles, and (2) the perfection of greatly-improved synthetic baking enamels, specifically designed for vacuum metallizing.

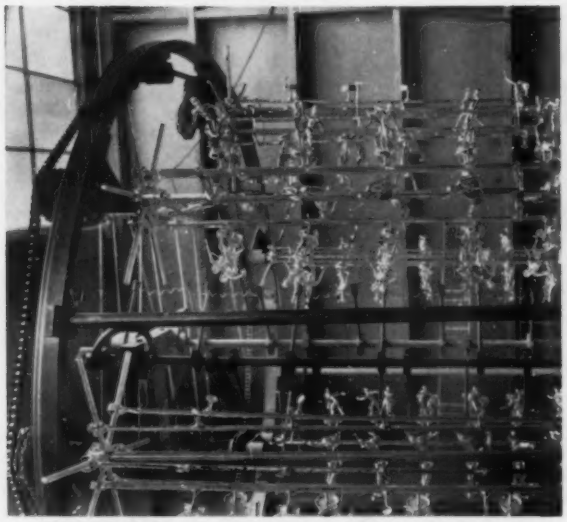
NEW PUMPING SYSTEMS

Heart of any vacuum plating system is the pumping equipment, which includes a combination of mechanical and oil-diffusion pumps. Since metallizing is a production operation, rapid pump-down is highly important in making vacuum metallizing competitive as a finishing process. An example of the recent improvements made in such equipment is the new Stokes Model 427-4 vacuum coater. This unit has a 72-inch diameter vacuum chamber and a pumping system that is engineered in a new modular design.

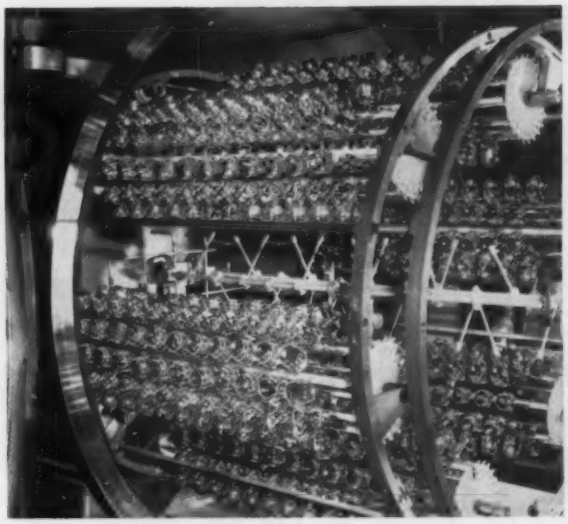
The pumping system has two identical combinations of mechanical pump, diffusion pump, and booster pump — each combination connected independently to the vacuum chamber through its own high-conductance manifold and high-vacuum valve. In addition, refrigerated moisture traps can be added to improve the efficiency of the diffusion pumping system during humid weather.

Either of the diffusion pump and booster pump pairs, and either of the two mechanical pumps, can be cut out for periodic routine maintenance, or can be isolated from the rest of the pumping system for selective performance checking, without shutting down the entire metallizer. Total pumping capacity of the two 16-inch diffusion pumps and the two 4-inch booster pumps which back them up is 22,000 cfm at 0.5 micron of mercury.

The clean, dry, empty vacuum coater is pumped down to normal coating pressure in five minutes or



CLOSE UP of racked parts ready for metallizing.



AFTER METALLIZING the parts have a bright mirror finish.

less. From three to four loaded cycles per hour, and sometimes more, can be run, depending on humidity and the cleanliness of the chamber.

Vacuum coaters of this type are complete packages, operating from a control console by pushbuttons, through electrically interlocker pump and valve controls. Thus, operations are sure to be conducted in correct sequence. The electrical hook-up includes automatic crossover from rough to fine pumping, timer control of filament flash, and automatic vacuum break.

NEW ENAMELS, LACQUERS

Vacuum metallized finishes are only as good as the coatings that underlie them and protect them. As vacuum metallizing production gained volume and stature, enamel and lacquer manufacturers steadily developed better and better coatings specifically adapted for vacuum metallizing.

The newer types are universal in that they can be used for both base and topcoat. In addition, they have superior capabilities to smooth the metal surface, filling tiny cracks and scratches, and sealing small surface pores. They are very durable and highly resistant to abrasion, handling, and weather.

RESULTS OF TESTS

Salt spray tests of vacuum metallized finishes with these new lacquer coatings have shown that they can withstand such exposure for up to 500 hours without penetration of the lacquer and attack on the aluminum deposit. These same finishes can withstand up to 1000 hours in a weatherometer with no softening, blistering, loss of adhesion, or perceptible discoloration.

Standard Taber abrader tests on vacuum metallized coatings, using a CS-10 wheel and a 500-gram weight, show a performance life equal or superior to copper-chrome electroplate. Standard melamine coatings resist temperatures up to 150° F. Epoxy resins are available for higher temperature service, and silicones for heats up to 500° F, if necessary.

For most purposes, the coating material is a clear, synthetic baking enamel. Curing is done in an oven at 300-325° F for 30 minutes. In the early days of vacuum metallizing, the top coat was often tinted to produce copper, gold, or color effects other than the blue-white of chromium. However, minute variations in thickness of the coating at the edges of the work made color variations that were undesirable. An accepted tinting practice now is to use clear final coatings, and to stain this coating with a dye subsequent to baking, or to break in on the final baking with an immersion in the stain when curing is partially done.

HOW SAVINGS ARE ACHIEVED

The chief source of economy in vacuum metallizing die castings is that unskilled workers can produce good work. Vacuum plating installations don't require the constant titrating and other testing of solutions, water softening, and electrical maintenance needed by electroplaters.

The direct capital outlay required for vacuum metallizing equipment is only 20 to 30 percent of that for an electroplating outfit of comparable productivity. Moreover, where electroplating requires manual or automatic buffing or polishing, this operation is completely eliminated in vacuum metallizing. Die castings to be vacuum metallized need only be clean and smooth, with a minimum of flash. Aluminum die castings, which are electroplated only with difficulty, can be vacuum plated by standard methods as easily as zinc.

The versatility of vacuum metallizing and the ease of changing from one job to another are other attractive features of the process. Color change involves simply a substitution of the dye. Once the work-holding racks have been made, production can proceed uninterrupted.

In fact, barrel plating and industrial hard chrome plating are the only areas in which vacuum metallizing does not attempt to compete with chrome electroplating for appearance and corrosion resistance.

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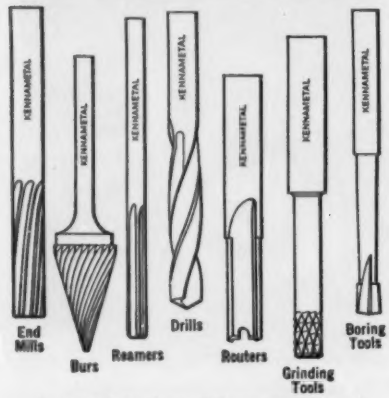
FLUTED TOOLS



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LATROBE, PENNSYLVANIA

ALUMINUM DIP BRAZING

ALUMINUM DIP BRAZING permits production of complex assemblies which otherwise would be impossible. It greatly increases possibilities open to the designer.

The dip brazed joint in a correctly-designed aluminum assembly will be from 80% to 100% as strong as the parent material. Corrosion resistance is at least as good as for other types of joining, and warpage due to uneven heating is eliminated.

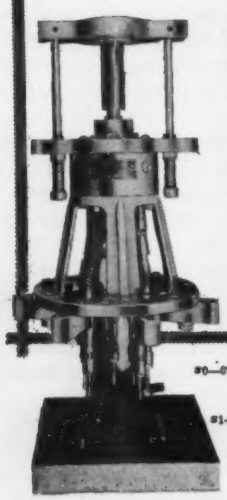
The process is called dip brazing because joining is done by dipping the complete assembly into a pot of heated flux. It is called brazing because the filler metal (an aluminum alloy) melts slightly lower than the melting point of the aluminum parts to be joined.

Filler metal flows into spaces between the closely-fitted surfaces of the joints by capillary action. Preplaced pieces of filler metal and the extremely low viscosity of the molten flux produces perfect joints in locations which are completely within the assembly and can neither be seen or reached from outside the assembly.

Here's the dip brazing cycle:

1. Degrease unassembled parts.
2. Immerse in caustic bath.
3. Rinse.
4. Immerse in neutralizer.
5. Rinse.
6. Immerse in acid solution.
7. Rinse.
8. Assemble.
9. Preheat.
10. Immerse in heated flux for 45 seconds to 2 minutes.
11. Air cool.
12. Immerse in 212°F water.
13. Rinse.
14. Neutralize in acid.
15. Rinse.
16. Dichromate, nitric acid dip.
17. Rinse.

ERRINGTON
UNIVERSAL JOINT ADJUSTABLE TAPPING & DRILLING HEAD



Here's another hi-speed production tool from Errington. This dependable tool is adjustable to any pattern of holes . . . is available with 4 or 6 spindles. Positive clutch drive and reverse. Head made of the best grade sand Cast Aluminum with hardened and ground gears and spindles (made in one piece). Full grooved ball thrust bearings at all thrust points and Oilite bronze radial bearings. *Remember to do more . . . better . . . faster . . .* rely on Errington Hi-Speed Production Tools.

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Min. centers 11/16"
Max. Pattern 5¼"

#1—7/32" to ⅜" Tap Capacity
Min. centers 1⅛"
Max. Pattern 8"

LESS THAN ½ MINUTE TO CHANGE HEAD FROM DRILLING TO TAPPING OR TAPPING TO DRILLING

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Main Office and Plant: STATEN ISLAND 4, NEW YORK

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ANNOUNCING

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ANOTHER REPORT FROM THE ALMCO ALBUM OF NEW PRODUCTS

To know what's new in Barrel Finishing

Keep Your Eye on ALMCO!

The right machine, the right method, the right media . . . that's the basis for planning any ALMCO *Supersheen* System. And a continuing program of research, ever seeking even better barrel finishing . . . that's the secret of ALMCO progress in making metal finishing easier, faster and finer . . . and more profitably productive for you. Shown below are typical recent developments that give concrete meaning to the phrase, *"To know what's new in barrel finishing, keep your eye on ALMCO!"*

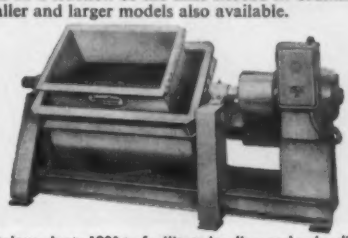
New Spindle Machine

For precision finishing of complex high-quality components such as gears, bearing cages, spline shafts, pump rotors, jet blades, etc., on a continuous production line basis. Large parts or clusters of smaller parts are chucked directly to spindles from single operator's work station. Spindles lower parts into high velocity stream of abrasive media contained in tub that rotates at controlled speed. Spindles themselves also rotate while in the abrasive stream, uniformly exposing parts to the abrasive stream. Indexing head slowly carries all spindles in 1 to 9 min. trip around the tub. All surfaces get the same amount of precision finishing.

Models available with automatic or manual indexing, 2 to 16 spindles, tub diameters of 48" to 90", and drives of 5 to 30 hp.

New ALMCO VIBRASHEEN

The new *Vibrasheen* method is particularly suited for faster burr removal from parts and finishing hard-to-reach internal crevices. This amazing metal finishing machine vibrates a full 5 cu. ft. load of parts and media . . . uses scrubbing action to remove burrs and finish parts in a fraction of the time needed in ordinary operations. Smaller and larger models also available.



Container pivots 120° to facilitate loading and unloading.

ALMCO *has the right New* BARREL FINISHING EQUIPMENT *for you!*

New ALMCO Roll Barrels

One man operates entire Roll Barrel System. Makes low-cost precision barrel finishing available to any deburring and finishing department! Ideal for finishing large variety of small lots of parts.

New Barrel Finishing Compounds

No. 407. An alkaline powdered composition used in cleaning, brightening and grinding ferrous parts.

No. 408. A very fine silica flour base powdered abrasive grinding compound for use with all metals and alloys. Provides ultra-low micro-inch finishes.

No. 410. An alkaline compound for one operation light deburring and color cycles on ferrous metals.

No. 412. A highly concentrated burnishing compound with tallow and oil soap base for use on both ferrous and non-ferrous metals.

No. 501R. A concentrated mild alkaline compound to inhibit rusting of all ferrous metals. Retains high burnishing finish.

43 other *Supersheen* compounds, plus a complete line of media, are also available from ALMCO. Ask how you can enjoy quantity discounts with the ALMCO Blanket Order Program! Start saving today!

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First choice in heavy-duty tank cleaning—hard-working Oakite "24"

Users everywhere agree that their best way to clean iron and steel parts is to tank-soak them in a hot solution of heavy-duty Oakite 24. This hard-working alkaline cleaner gets under the dirt layers and literally tears the soil from the surface. Despite excessive soil contamination of solution Oakite 24 maintains proper pH level and provides long, effective cleaning action.

Oakite 24 is but one of a wide range of alkaline tank-cleaning compounds. Others include medium and light duty oil and grease removers; self-emulsifying solvent cleaners specially designed for removing buffing compound residues, pigmented drawing compounds and other tenacious burned-on solid-particle dirts and smuts. Also available is a useful selection of materials for cleaning brass, copper, aluminum, magnesium, lead, tin and zinc.

Which is best for you? Only you and the Oakite man together can decide. It depends on your equipment, the parts you process, the next production step. Ask the Oakite man. From over 30 materials, you're *sure* to get the one cleaner that works most efficiently for you. Write for Bulletins. Oakite Products, Inc., 34G Rector Street, New York 6, N. Y.

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STEVENS GETS CONTRACT TO STUDY SLIP CASTING

STEVENS INSTITUTE OF TECHNOLOGY has received $400,000 in government and industrial contracts to develop new methods of producing metal parts by slip casting. The research is being done at the Stevens Powder Metallurgy Laboratory under the direction of Prof. Gregory J. Comstock.

The contracts include work on fuel elements for nuclear power reactors, developing new techniques for economically producing components of metals and alloys with excessively high melting points, and producing steel ordnance parts which will be subjected to high stresses. Contracting agencies include the Sandia Corp., the U.S. Atomic Energy Commission, the U.S. Army Ordnance Dept. at Springfield Armory, and the Austenal Co.

Slip casting is a new and major breakthrough in powder metallurgy. It consists of pouring a liquid suspension of fine metal powders into inexpensive porous molds at room temperatures. The casting hardens when the metal powder suspensions lose their liquid through the porous walls of the mold. The fine metal particles adhere together and take the shape of the surrounding walls.

They are then removed from the mold and sintered. In this manner, metals and alloys have been produced in the Stevens Laboratory in excess of 99% of their theoretical density.

TUMB-L-MATIC NAMES TWO NEW SALES REPS

TUMB-L-MATIC, INC., has appointed two new sales representatives for its tumbling equipment and compounds: Thomson and Willett Co., Haverford, Pa., will cover eastern Pennsylvania, southern New Jersey, Delaware, and Maryland; Joseph Upton, Jr., New York, will cover metropolitan New York, northern New Jersey, and the Hudson Valley section as far north as Schenectady.

ADLER JOINS MICRONIZED

Arthur Adler has been appointed director of research at MICRONIZED METALS, INC., producer of specialty metal powders.

NOW—A Great New Combination for DOUBLE PROTECTION Against Corrosive Conditions on Aluminum, Magnesium or Zinc

IRIDITE®
CHROMATE CONVERSION COATINGS
and
IRILAC™
CLEAR PROTECTIVE COATINGS

Now, here's a fast, easy, economical way to almost double the protection against corrosion on your product. Simply follow up the IRIDITE process with a fast, easy application of IRILAC . . . and you've given your product extra protection for longer resistance to corrosive conditions, longer shelf or storage life protection from handling, and increased beauty for more attractive appearance and faster sales.

ON ALUMINUM

An IRIDITE-IRILAC finish will provide longer life for storm doors, windows, outdoor furniture, auto parts and accessories, tubing or wire goods. And, you have a choice of color finishes such as natural aluminum and golden yellow. Other colors may be obtained by an additional dye operation.

ON MAGNESIUM

IRILAC over an IRIDITE No. 15 finish increases corrosion protection, and provides resistance to finger printing and abrasion on all types of products, with color appearance ranging from light to dark brown.

ON ZINC

IRIDITE plus IRILAC gives your product longer life and brighter appearance. Color choices range from clear IRIDITE to olive drab, plus colored dye finishes.

IRIDITE is the tradename for a specialized line of chromate conversion coatings that can be applied to any non-ferrous metal by brush, dip or spray methods—at room temperatures—manually or with automatic equipment. Upon application, a thin film forms which becomes an integral part of the metal itself, and thus cannot chip, flake or peel. No special equipment, exhaust systems or specially trained personnel are required.

IRILAC is the tradename for a line of clear protective coatings for all metals. As safe and easy to handle as water, they may be applied by brush, dip or spray methods. No exhaust or special fire protection equipment required. Adds protection and abrasion resistance to any base metal, plated part or parts treated with electrolytic or chemical post treatments, without chemical change.

For complete technical information on IRIDITE Chromate Conversion Coatings or IRILAC Clear Protective Coatings, write for FREE TECHNICAL MANUAL. Or, see the Allied Field Engineer in your area. He's listed under "Plating Supplies" in the yellow pages.

Allied Research Products, Inc.

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SMELTER-GOVERNMENT FIGHT CONTINUES

Carl H. Burton, secretary of the ALUMINUM SMELTERS RESEARCH INSTITUTE, has charged that the U. S. Commerce Dept. overlooked the fact that the export rate jumped almost 100% during the period studied in its denial that scrap aluminum exports have reached an "alarming" rate.

Burton pointed out that the department supposedly based its decision that "limitations on scrap exports are not warranted" upon study and examination made during August and September. During these two months, the scrap export rate climbed from 5.6 million pounds to more than 10 million pounds.

The charges mark the latest round in a smelter-government fight which began last summer when the industry requested curtailment of a scrap export rate that may reach more than 50 million pounds for last year.

ICI EXPANDS PROGRAMS

The INVESTMENT CASTING INSTITUTE has announced an expansion of its technical programs, and is seeking a technical director to supervise this expansion, including the organization of meetings and seminars, the expansion of the intra-industry research program, and the editing of the ICI's *Technical Review*.

At the same time, a new category of Allied Membership was established in the ICI, and is available to users of investment castings. Allied Membership is available on a company or individual basis, but only to those not qualified for Regular Membership.

Allied Members will be eligible to attend all technical meetings and may participate in the intra-industry research program. They will also work on technical committees and participate in study groups. Companies interested in Allied Membership can contact the Investment Casting Institute, 27 East Monroe St., Chicago 3.

WHEELABRATOR NAMES TWO

WHEELABRATOR CORP. has appointed Frederick J. Pichard assistant director of marketing and Donald A. Swardson manager of abrasive and Long-Lyfe parts sales.

Pichard, formerly manager of Standard Equipment sales, will develop special marketing programs in line with company plans for expansion. Swardson, formerly an abrasive specialist in the Mishawaka office, will develop and carry out promotional programs.

U. S. ENGINEERS INSPECT POWDER METALLURGY PLANT

A group of leading military engineers, headed by Henry Handler, assistant to Major General August O. Schomburg, Deputy Chief of Ordnance, recently inspected the powder metallurgy manufacturing facilities of DIXON SINTALOY, INC., PITNEY BOWES, INC., and LIONEL CORP.

The program was arranged by the powder metallurgy industry liaison committee of the American Ordnance Association, in conjunction with the New York Ordnance District. Its purpose was to give the ordnance experts a better understanding of powder metallurgy processing and its potential use to ordnance.

CONFORMING MATRIX NAMES SALES REP

Howard P. Modjeski, laboratory, engineering, and production specialist in spray paint product decorating, has joined MIDWEST TECHNICAL SALES as representative for CONFORMING MATRIX CORP. He will cover northern Illinois, Wisconsin, and Minnesota.

GRIND...POLISH...DEBURR in one operation with Hammond FLAT FINISHERS

For fast, uniform, economical finishing of flat work such as sheets, bars, strips, stampings and extrusions with one machine, one operator and one pass.

AUTOMATIC AIR TENSIONING: maintains correct tension on abrasive belts and conveyor belt • VARIABLE SPEED CONVEYOR: rate of feed is adjustable from 0 to 60 FPM • WORK HOLDERS: hold-down rolls, electro-magnetic platen and various types of conveyor belts • AMMETER CONTROL: an ammeter for each head allows operator to determine and maintain the polishing pressure necessary for a uniform finish and longer belt life • V-BELT DRIVE: allows abrasive belt speed to be changed to suit the work • MICROMETER DIAL: controls heads for required depth of cut.

1 TO 6 HEADS
6" to 12" WIDE

Hammond Flat Finishers are available in 6", 8", 10" and 12" widths — handle work up to 6" high.

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SEND SAMPLES
Send us one finished and several rough samples. You will receive a complete Engineering Report and Production Analysis without obligation.

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offers you the most complete service available today for precision-controlled barrel finishing

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A fresh approach to the compound problem, offering many new types to meet the changing finishing needs of industry.

A broad line of standard machines to meet any finishing application.

A complete line of materials handling equipment, especially designed for a systematic and uniform work flow.

FOR FASTER, more uniform metal finishing *at low cost*... for a reliable, single source of supply of processing materials and equipment ...and unbiased counsel on *any* parts finishing problem, you can count on CARBORUNDUM. The exclusive barrel finishing technique developed by CARBORUNDUM now makes possible optimum standards of precision metal finishing. It permits scientific control of most finishing variables and at economies never before dreamed possible. It will pay you to look into CARBOTROL 7 today! A staff of trained specialists and distributors is ready to assist you.
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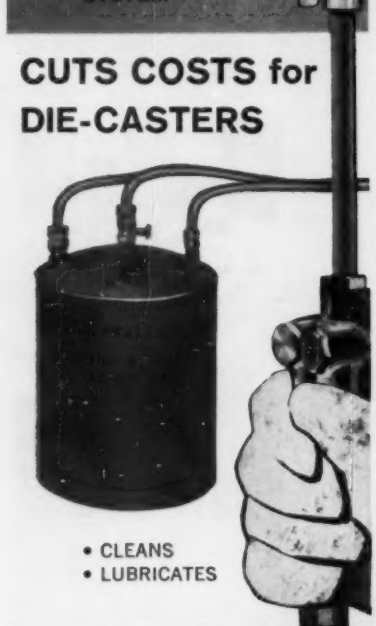

CUTS COSTS for DIE-CASTERS

- CLEANS
- LUBRICATES

Remove loose flash and clean the mold with a powerful, clean air blast — then lubricate all mold surfaces evenly, *using the same gun* —with a flick of the thumb! Adjustment *at the gun* for full range from zero to a heavy mist, spraying, fogging, or vaporizing the lubricant. Speeds up mold operation and reduces casting rejects. Makes every machine cycle count.

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P. O. Box 8720, Cleveland 35, Ohio

4th in a series of POWDERED METAL PARTS applications by REESE

when **SERVICE** and **KNOW-HOW** count as much as **ECONOMY**

3 Remet Powdered Metal Parts go into Sargent & Greenleaf

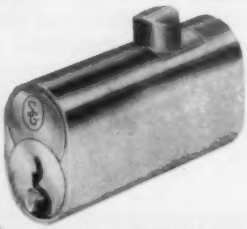
FILE CABINET LOCKS

(A) PLUG
(B) FILLER
(C) BOLT

According to Mr. George Paul, Chief Engineer, Sargent & Greenleaf, Inc., "A number of powdered metal parts producers were contacted to make these low cost, close tolerance, complex parts. Reese was the only one interested. We now find other practical applications and will, of course, use Reese as our prime source".

(C)

(B)



Formerly a zinc base die casting . . . now sintered brass for a higher melting point for use on insulated files.

(A)

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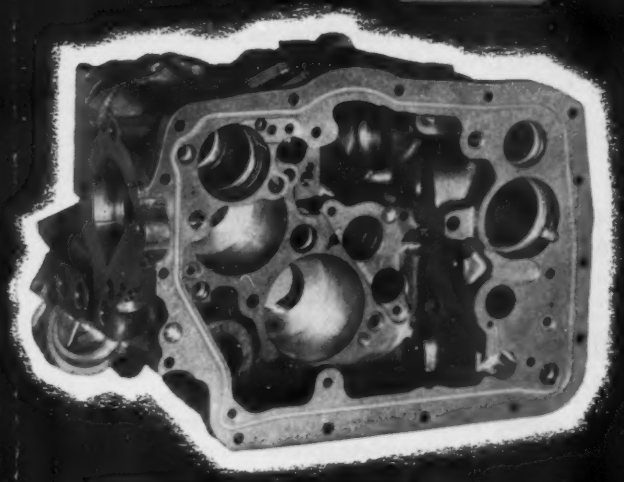

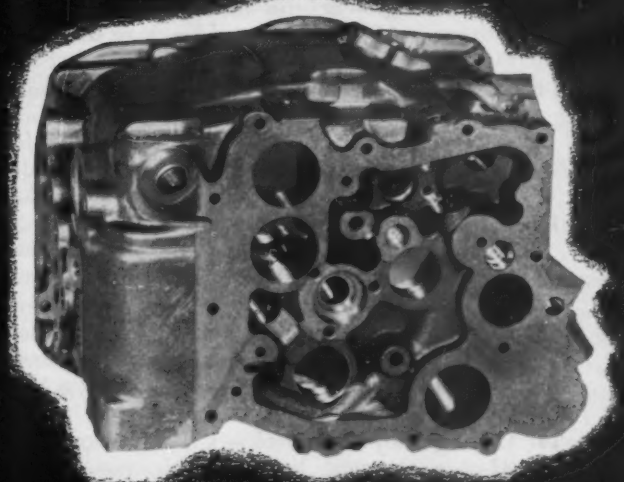

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Circle No. 102 on Reader Service Card

USEFUL LITERATURE, CATALOGS, MANUALS

Qualified readers may obtain any of these technical publications by circling the numbers on the Reader Service Cards facing page 122

PROCESSES

143 Die Castings — BENTON HARBOR MALLEABLE INDUSTRIES — 14 page illustrated brochure shows the facilities of the company's new die casting division.

144 Die Casting, Permanent Mold Casting — PEERLESS ALUMINUM FOUNDRY CO., INC. — 32-page brochure shows the company's complete facilities for producing aluminum permanent mold and die castings.

145 Extrusions — SUPERIOR INDUSTRIES, INC. — 8-page brochure shows the company's complete facilities for making and finishing industrial extrusions.

146 Die Cast Dies — R. H. FREITAG MFG. CORP. — Brochure shows facilities for producing die cast dies, stamping dies, jigs and fixtures, special machinery and the handling of precision production machining.

147 Casting Alloy Data Book — U.S. REDUCTION CO. — 32-page technical book on aluminum casting alloys. Die casting and permanent mold casting alloys are listed in line chart form which cross-references pertinent chemical and physical specifications of all the common alloys.

MATERIALS & EQUIPMENT

148 Bearing Aluminum Bars — BUNTING BRASS & BRONZE CO. — 12-page technical brochure on "The Technology of Bunting Bearing Aluminum Bars".

149 Stainless Steels — ALLEGHENY LUDLUM STEEL CORP. 24-page data book gives mechanical and physical properties, at various temperatures, for the aircraft steels AM-350 and AM-355.

150 Die Casting Lubricants — E. F. HOUGHTON & CO. — 4-page brochure gives data on lubricants, cleaners, coolants and rust preventives for the die casting industry.

151 Resistance Heater — HERSCOTT CORP. — Literature describes the portable Reslec Resistance Heater which meets lower power requirements for warm heading operations.

152 Beryllium Oxide — THE BERYLLIUM CORP. — 4-page technical brochure describes beryllium oxide, gives fabrication techniques and lists beryllium oxide products.

153 Suspension Scale — W. C. DILLON & CO., INC. — 8-page bulletin gives complete specifications on the Model P Suspension scale that has a 10,000 pound capacity.

154 Furnace & Oven Controls — MINNEAPOLIS-HONEYWELL REGULATOR CO. — 40-page booklet gives specifications on ElectroniK Potentiometers, Millivoltmeters, Thermocouples, Radiamatic Detectors, Thermometers, Flame Safeguard Systems, Industrial Controls, etc.

FINISHING

158 Tumbling Shape — MINNESOTA MINING & MFG. CO. — 8-page technical brochure on "C-R" Tumbling Shape. Gives field usage results.

159 Automatic Painting Machine — CONFORMING MATRIX CORP. — Technical data on a method of automatically spraying one, two, or three surfaces of generally oval or rectangular-shaped pieces of varying length.

160 Fume, Mist Suppresant — ALLIED RESEARCH PRODUCTS, INC. — Technical data on ARP #21, a fume and mist suppresant for use in chrome plating, anodizing, and bright dipping, where gas generation is a problem.

161 Barrel Finishing — BMT MFG. CO. — 8-page brochure on Slide Honing and other precision barrel finishing. Shows units and accessories.

162 Lapping-Polishing Machines — SYNTRON CO. — Bulletin gives complete specifications on vibratory lapping-polishing machines for mechanical polishing of metallurgical samples.

163 Lustre Finishing — TUMB-L-MATIC, INC. — Technical bulletin on "Quicklustre #104 Wax Process". A low cost method of imparting lustrous or glossy natural finishes.

164 Cleaning Solvents — HARCO CHEMICAL CO. — Data sheet on a new series of safety cleaning solvents in eleven standard formulation ranges.

165 Chemical Milling — CHEMICAL CONTOUR CORP. — 8-page brochure shows the company's facilities for chemical milling odd shapes, tubular configurations, complex curves, and multiple-stem patterns.

166 Electrostatic Painting — RANSBURG ELECTRO-COATING CORP. — 12-page brochure shows how 90% paint savings is possible with the Electrostatic Hand Gun.

167 Conversion Coating — OAKITE PRODUCTS, INC. — Technical data on ChromiCoat, a process that improves paint adherence and imparts corrosion resistance for aluminum.

168 Nondestructive Testing — MAGNAFLUX CORP. — Brochure describes a wide range of nondestructive test systems.

169 Blast Cleaning — SANSTORM MFG. CO. — Catalog #594 gives complete data on open top and closed top pressure type sandblast machines.

170 Electroplating — FREDERICK GUMM CHEMICAL CO., INC. — 8-page bulletin describes plating equipment and supplies being distributed by the company.

171 Finishes Nickel — MACDERMID INC. — Technical data sheet on Matex Electropolish BN, an acidic solution for producing brilliant finishes on solid nickel or electrodeposit nickel.

172 High Lustre Finishing — TUMB-L-MATIC INC. — Technical bulletin on the DL Process, for achieving color, lustre and texture comparable to hand buffing.

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Experience and leadership in the manufacture of aircraft components have established Misco as one of the largest producers of investment castings. With the development of Misco's MONO-SHELL Process, which permits the production of many high quality components once avoided by conventional investment casting systems, the total industrial market can be served at competitive prices. *Send your inquiries, details of your requirements, or parts for quotation, to our Industrial Division.*

Misco Precision Casting Company

Plants in
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Whitehall 2-1515

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Industrial Division, Whitehall, Michigan
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Company_____ Address_____

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HOW TO DESIGN AND BUY INVESTMENT CASTINGS

It's just as important to know what not to do as it is to know what to do. What's more, the more an engineer or buyer knows about a manufacturing process, the better able he is to design for and buy components made by that process. These are the basic ideas behind a new manual, "How To Design And Buy Investment Castings," which has just been published by the Investment Casting Institute.

The seven chapters of this book give the designer and buyer practicle information, based on the concensus of the entire industry. While each chapter is written by an individual author who is expert in the particular field, each chapter was also put under the industry microscope. Designers and buyers can, therefore, use this manual with the full knowledge that it carries industry wide approval and is not simply one man's opinion.

With the exception of a relatively few types of parts which can only be made by investment casting, the process is just another method of fabricating metals. If it is to be widely and economically used it must represent the least costly method of getting a functionally adequate component. That's why every chapter, whether it be on the process, the selection of alloys, examination for quality, or specifically on design factors is slanted heavily toward correct, minimum cost design.

The original concept for the book came from R. R. Miller, president of Precision Metalsmiths, Inc. and the first draft was written by Leo E. Carr, manager of Special Projects for Miller's company.

The final book is the review, and revision if necessary, by experts in the various fields of Carr's original work. Thus the manual is an accurate opinion of the investment casting industry.

The formal chapter headings of the book are:

LEO E. CARR

Leo E. Carr, the original author of the new book on investment casting, is in charge of special projects for PRECISION METALSMITHS, INC., of Cleveland, Ohio.

Carr has been associated with Precision Metalsmiths for over 10 years. During that time he has worked in almost every phase of the investment casting business.

Before coming to his present position, Carr had extensive experience in sales in the general hardware field. In addition to the usual formal education Carr has taken special training in industrial psychology and techniques of writing and presentation.

- What Investment Castings Can Do For You
- Basic Production Techniques
- Which Alloy To Use
- Vacuum Metallurgy
- Determining Quality Of Cast Parts
- Designing For Investment Castings
- How To Buy Investment Castings

Some of the specific subjects covered are: Alloy Specifications, Alloy Selection Chart, Inspection Techniques, Investment Casting Terminology, and Standards for X-ray inspection, visual inspection, surface inspection, and air foil sections.

LOOK FOR THESE MARKS OF RESPONSIBILITY

ADCI MEMBERS

A & A Die Casting Inc., Gardena, Calif.
Ability Die Casting Co., Chicago, Ill.
Accurate Die Casting Co., Cleveland, Ohio
Advance Pressure Castings Corp., Denville, N. J.
Advance Tool & Die Casting Co., Milwaukee, Wis.
Ainsworth-Precision Castings Co., Div. of Harsco Corp., Fayetteville, N. Y.
Ainsworth-Precision Castings Co., Div. of Harsco Corp., Chicago, Ill.
Ainsworth-Precision Castings Co., Div. of Harsco Corp., Cleveland, Ohio
Ainsworth-Precision Castings Co., Div. of Harsco Corp., Rockford, Ill.
Allen-Stevens Corp., Woodside, N. Y.
Alloy Die Casting Co., Los Angeles, Calif.
Aluminum Company of America, Garwood, N. J.
Aluminum Company of America, Bellwood, Ill.
Aluminum Die Casting Co., Los Angeles, Calif.
Ambrit Industries, Inc., Glendale, Calif.
American Aluminum Casting Co., Irvington, N. J.
Anderson Die Casting & Engrg. Co., Div. Mission-West Mfg. Co., Los Angeles, Calif.
Atlas Die Casting Co., Germantown, Ohio
Badger Die Casting Corp., Milwaukee, Wis.
Blue Ridge Pressure Castings, Inc., Lehighton, Pa.
Callen Manufacturing Corp., Maywood, Ill.
Cast-O-Matic Corp., Syracuse, N. Y.
Central Die Casting & Mfg. Co., Inc., Chicago, Ill.
Century Die Casting Co., Chicago, Ill.
W. L. Chapman Co., Inc., Pasadena, Calif.
Char-Lynn Company, Minneapolis, Minn.
Chicago White Metal Casting Inc., Chicago, Ill.
Cincinnati Die Casting Co., Cincinnati, Ohio
Commercial Die Casting Co., Los Angeles, Calif.
Congress Drives Division, Tann Corp., Detroit, Mich.
Conneaut Die Casting Co., Conneaut, Ohio
Continental Die Casting Corp., Detroit, Mich.
DeCardy Bros. Co., Chicago, Ill.
Delta Die Casting Corp., Schiller Park, Ill.
Detroit Die Casting Corp., Detroit, Mich.
Diecast Corporation, Jackson, Mich.
Die Cast Products, Inc., Gardena, Calif.
Doehler-Jarvis Division of National Lead Co., Batavia, N. Y.
Doehler-Jarvis Division of National Lead Co., Grand Rapids, Mich.
Doehler-Jarvis Division of National Lead Co., Pottstown, Pa.
Doehler-Jarvis Division of National Lead Co., Toledo, Ohio
Dollin Corporation, Irvington, N. J.
Dow Metal Products Co., Div. of The Dow Chemical Co., Midland, Mich.
Du-Wel Metal Products, Inc., Bangor, Mich.
El Monte Tool & Die Casting, Inc., El Monte, Calif.
Engineers Tool & Mfg. Co., Bridgeport, Conn.
Falconer Metal Specialties Co., Inc., Lakewood, N. Y.
Fanarc Manufacturing Co., Inc., Whittier, Calif.
Federal Die Casting Co., Chicago, Ill.
Future Products Co., Portland, Ore.
Gibbs Automatic Div., Pierce Industries, Inc., Henderson, Ky.
Grand Die Casting, Inc., Elmwood Park, Ill.
C. M. Grey Industries, Inc., East Orange, N. J.
Gries Reproducer Corp., New Rochelle, N. Y.
Hamilton Diecasting Corp., New Hyde Park, N. Y.
Harbot Die Casting Corp., Nutley, N. J.
Hartzell Mfg. Inc., St. Paul, Minn.
Harvill Corporation, Los Angeles, Calif.
Heick Die Casting Corp., Chicago, Ill.
Hilfinger Corp., Toledo, Ohio
Hoover Company, The, North Canton, Ohio
Hyatt Die Casting & Engrg. Corp., El Segundo, Calif.
Industrial Die Casting Co., Chicago, Ill.
Irrigation Equipment Co., Inc., Industrial Div., Eugene, Ore.
Jersey Plastic & Die Casting Co., Irvington, N. J.
Jet Die Casting Corp., Chicago, Ill.

(List Continued on Next Page)

DIE CASTING RESEARCH FOUNDATION PARTICIPANT

SYMBOLS OF RESPONSIBLE DIE CASTERS

How To Select Your Die Caster

Trade marks, emblems and insignia, proudly displayed by a manufacturer, are mere window dressing UNLESS they actually assist You in arriving at a desirable source of supply. As far as die casting purchases are concerned, the above symbols do just that. Here's why:

1. The ADCI symbol, identifying the member companies of the American Die Casting Institute listed here, guides you to a vendor subscribing to the ADCI "Product Standards For Die Castings" written *on an industry-wide basis* to provide you with die casting sources which are:

   a) pledged to the highest standards of business ethics, and

   b) equipped to help you in arriving at a die casting design and an alloy selection which will fill your requirements *at the most economic level of production.*

2. When your die casting is to be made of zinc alloy, it will be a Certified Zinc die casting if the vendor is an ADCI member. This means that the die casting will be produced under a voluntary analytical program providing, through unbiased commercial laboratory control, consistent conformance to ADCI and ASTM standard specifications—to assure the maximum mechanical and physical properties inherent in "on grade" zinc die castings.

3. ADCI member companies also participate in the Die Casting Research Foundation—a unique voluntary organization dedicated to the constant improvement of the die casting process and its growing usefulness as a metal working method. Progress in research results in ever-increasing efficiency in die casting production.

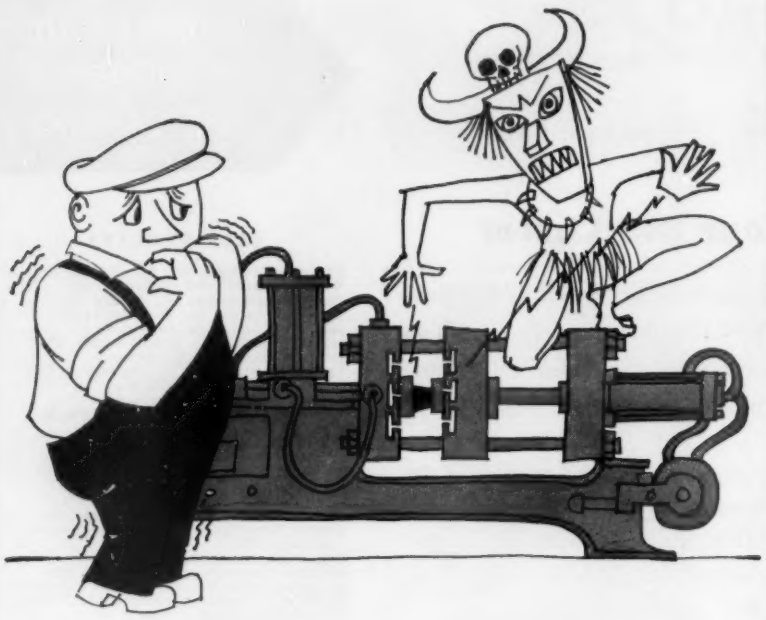
These symbols are your guide to the best in die casting *and you will find that the best costs no more*—look for them.

ADCI MEMBERS

Kamin Die Casting & Mfg. Co., Chicago, Ill.
Kiowa Corporation, Marshalltown, Iowa
Paul Krone Die Casting Co., Chicago, Ill.
Lansco Die Casting Co., El Monte, Calif.
Latrobe Die Casting Co., Latrobe, Pa.
Lester Castings, Inc., Bedford Heights, Ohio
Litemetal Dicast, Inc., Jackson, Mich.
Los Angeles Die Casting Co., Los Angeles, Calif.
Madison-Kipp Corp., Madison, Wis.
Manor Die Cast Corp., Bedford, Ohio
Jos. P. Manz Die Casting Co., Inc., Inglewood, Calif.
L. E. Mason Co., Boston, Mass.
Metalmasters, Inc., Chicago, Ill.
Meta-Mold Aluminum Co., Sub. of The Dayton Malleable Iron Co., Cedarburg, Wis.
Midwest Die Casting Co., Milwaukee, Wis.
Milwaukee Die Casting Co., Milwaukee, Wis.
Missouri Diecasting Div., Pierce Industries, Inc., St. Louis, Mo.
Modern Die Casting Corp., Chicago, Ill.
Monarch Aluminum Mfg. Co., Cleveland, Ohio
Mt. Vernon Die Casting Corp., Stamford, Conn.
Nelson Metal Products Div., Midland-Ross Corp., Grand Rapids, Mich.
New Products Corp., Benton Harbor, Mich.
Newton-New Haven Co., The, New Haven, Conn.
Norgren-Stemac, Div. of C. A. Norgren Co., Littleton, Colo.
Oswego Casting Corp., Oswego, N. Y.
Pabcast, Gardena, Calif.
Paragon Die Casting Co., Chicago, Ill.
Paramount Die Casting Co., St. Joseph, Mich.
Parker White Metal Co., Erie, Pa.
Peasley Products Inc., Stratford, Conn.
Peat Mfg. Co., Div. of Textron, Inc., Norwalk, Calif.
Peerless Die Casting, Div. of Peerless Aluminum Foundry Co., Inc., Bridgeport, Conn.
Phoenix Die Casting Co., Buffalo, N. Y.
Pioneer Diecasters, Inc., Los Angeles, Calif.
Pittsburgh Die & Casting Co., Pittsburgh, Pa.
Premier Die Casting Co., Newark, N. J.
Pressure Castings, Inc., Cleveland, Ohio
Production Die Casting Co., Houston, Texas
Quad-City Die Casting Co., Moline, Ill.
Racine Die Castings Co., Racine, Wis.
Rangers Die Casting Co., Lynwood, Calif.
Republic Die Casting, Div. of Landers, Frary & Clark, St. Louis, Mo.
Rupert Die Casting Div., Pierce Industries, Inc., Kansas City, Mo.
St. Louis Diecasting Corp., St. Louis, Mo.
Schultz Die Casting Co., Toledo, Ohio
Schultz Die Casting Co. of Canada, Wallaceburg, Ont., Canada
Seaboard Die Casting Corp., West Islip, N. Y.
Sherman Pressure Casting Corp., New York, N. Y.
Springfield Die Casting Co., Inc., Kenilworth, N. J.
Stella Products Corp., Livingston, N. J.
Sterling Die Casting Co., Inc., Brooklyn, N. Y.
Stewart Die Casting, Div. of Stewart-Warner Corp., Bridgeport, Conn.
Stewart Die Casting, Div. of Stewart-Warner Corp., Chicago, Ill.
Stroh Die Casting Co., Inc., Milwaukee, Wis.
Superior Die Casting Co., Cleveland, Ohio
Techni-Cast Corp., Hamilton, Ohio
Titan Metal Mfg. Co., Div. of Cerro DePasco Corp., Bellefonte, Pa.
Tool-Die Engineering Co., Cleveland, Ohio
Twin City Die Castings Co., Minneapolis, Minn.
Union Die Casting Co., Whittier, Calif.
Universal Die Casting Co., Los Angeles, Calif.
Watchung Die Casting Corp., Plainfield, N. J.
Wells Die Casting Co., San Francisco, Calif.
Western Die Casting Co., Emeryville, Calif.
West Irving Die Casting Co., Bensenville, Ill.
Westland Die Casting, Inc., Glendale, Calif.
Wheaton Die Casting Co., Millville, N. J.
Withrow Die Casting Co., No. Hollywood, Calif.
Yoder Die Casting Corp., Dayton, Ohio

(List from Previous Page)

AMERICAN DIE CASTING INSTITUTE 366 MADISON AVENUE, NEW YORK 17, N. Y.
MURRAY HILL 2-2925



Don't bewitch stuck castings...use Die Slick!

Prevent stuck die castings, as well as scoring and soldering—*ahead* of time with Die Slick. Compounded under laboratory quality control, there is a grade of Die Slick for *every* job, no matter what metal or alloy you are casting, no matter what your production rate, and no matter how you apply the compound.

For aluminum die casting we recommend new Die Slick No. 44, the thixotropic compound that thins with solvent, kerosene, *or* water. It gives quick, clean casting release and when thinned with water reduces fire hazard, storage space and overall cost.

For zinc die casting we recommend Die Slick No. 9X, the stable emulsion that thins way out as far as 10 to 1 with water. 9X won't clog spray guns.

Order a gallon today, specifying the metal or alloy you are casting. Pay the invoice only if you are satisfied.

Die Slick is a registered trade mark of G. W. Smith & Sons, Inc.

DIE SLICK

used by die casters everywhere

G. W. SMITH & SONS, INC.,

1703 SPAULDING ROAD, DAYTON 32, OHIO

Circle No. 124 on Reader Service Card

LETTERS

continued from page 24

DIE CASTING SOURCE

In looking for complete die casting facilities we were referred to your company for further information.

We are seeking addresses of firms in the south east having the latest in precision die casting, geared for mass production. Also firms that would be interested in casting individual parts on a contract basis for another manufacturer.

We might be interested in installing our own die casting equipment at a later date. Therefore, we would appreciate any literature on this line which you might be able to furnish us.—O. S.

The January 1960 issue of PMM will be sent to this reader. This issue will carry a directory of contract die casting shops. We have also put this reader on circulation to receive the magazine regularly so that he will have ready access to both fabricators and suppliers through the advertisements.—Ed.

LEAKERS

We are having trouble with leaking die cast bearing plates and gear case covers. These parts are impregnated, but this is a costly method of sealing.

Can you give me the name of a company we could contact who might suggest a solution to our problem.—R. D. A., methods dept.

Without seeing the parts it is difficult to guess why these castings leak. A possible solution might be through the use of vacuum die castings or impact die castings. Some names have been suggested to this reader.—Ed.

ZINC BRIGHTENER

We would like to know if there is a chemical bright dip for zinc die castings. We prefer a solution which would not leave a toxic film on the surface.—E.G., chief chemist.

There are quite a few companies who put out brighteners for zinc die castings. A list of these companies has been sent.—Ed.

ABOUT THIS DIRECTORY

THIS YEAR, for the first time, this Die Casting Directory carries a listing of the manufacturers of die casting machines, trim presses, metal suppliers, and suppliers of all types of equipment associated with the die casting industry.

In addition there is, of course the alphabetical listing of contract die casting shops and a geographical listing of these shops as well as a listing of tool and die shops.

The editors hope that this expanded directory will be of even greater value to industry than the earlier ones.

KEY TO DIRECTORY LISTINGS

A single asterick means membership in the American Die Casting Institute. A double asterick means a participant in the certified zinc plan.

METALS – Letters indicate which metals will be cast. A–aluminum, B–zinc, C–magnesium, D–brass, E–lead, F–tin.

MACHINING – Numbers indicate the machining operations the company will do. An "s" after a number means this operation will be sub-contracted. 1–drilling & tapping, 2–turning, 3–facing, 4–milling, 5–broaching, 6–borning, 7–grinding.

FINISHING – Numbers indicate the surface finishing operations the company will do. An "s" after a number means this operation will be subcontracted. 1–abrasive belt sanding, 2–buffing & polishing, 3–plating, 4–painting, 5–chemical conversion coating, 6–barrel finishing, 7–vacuum coating.

TOOL & DIE SHOPS – The number 1 indicates die design service is available; 2 indicates die try-out equipment is available.

All information listed in this directory has been furnished by the individual companies. Extra copies of the directory are available at prices shown on page 4.

FOURTH ANNUAL **Die Casting DIRECTORY**

ALPHABETICAL LISTING
Custom Die Casters

A & A Die Casting Corp.* **
12901 S. Western Ave.
Gardena, Calif.
Metals: B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3s, 4s, 5s, 6s, 7s
Assembly: Yes

Allied Die Casting & Mfg. Co., Inc.
10029 Pacific Ave.
Franklin Park, Ill.
Metals: A, B
Machining: 1, 2, 3s, 4, 5s, 6, 7s
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s
Assembly: Yes

ABCO Die Casting Corp.
330 N. Harding Ave.
Chicago 24, Ill.
Metals: A, B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s
Assembly: Yes

Accurate Die Casting Co.* **
3089 East 80th St.
Cleveland 4, Ohio
Metals: A, B, C, D

Acme Die Casting Corp.
1635 Murray Ave.
Racine, Wisc.
Metals: A, B
Machining: 1, 2, 3s, 4, 5s, 6s, 7s
Finishing: 1, 2, 3s, 4s
Assembly: Yes

Acme Tool & Die Casting Co.
4250 E. Washington Blvd.
Los Angeles 23, Calif.
Metals: A, B, C, E
Machining: 1, 2, 3, 4, 5s, 6, 7
Finishing: 1
Assembly: Yes

Action-Hopkins Machine & Foundry Co.
2615 Second Ave., N.
Birmingham 3, Ala.
Metals: A, B, C, D, E
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 4, 6
Assembly: Yes

Adco Diecasting Co., Inc.
9555 Rush St.
El Monte, Calif.
Metals: A, B, C, D
Machining: 1, 7
Finishing: 1, 2s, 3s, 4s, 5s, 6, 7s
Assembly: Yes

Adept Castings, Inc.
5 Henrietta St.
Hicksville, N. Y.
Metals: B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3, 6
Assembly: Yes

Adjel Products Co.
13561 Helen Ave.
Detroit 12, Mich.
Metals: B
Machining: 1
Finishing: 1, 2, 3, 4, 6s, 7s
Assembly: Yes

Advance Pressure Castings, Inc.* **
Route #53
Denville, N.J.
Metals: A, B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3s, 4s, 5s, 6, 7s
Assembly: Yes

Advance Tool & Die Casting Co.* **
3760 N. Holten St.
Milwaukee 12, Wis.
Metals: A, B
Machining: 1, 2, 3, 4, 5, 6, 7s
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s

Ainsworth-Precision Castings Co.* **
Div. of Harsco Corp.
12500 Berea Rd.
Cleveland 11, Ohio
Metals: A, B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3s, 4s, 5, 6
Assembly: Yes

Ainsworth-Precision Castings Co.* **
Div. of Harsco Corp.
547 E. Genesee St.
Fayetteville, N. Y.
Metals: A, B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3s, 4s, 5, 6
Assembly: Yes

Ainsworth-Precision Castings Co.* **
Div. of Harsco Corp.
2025 Kishwaukee St.
Rockford, Ill.
Metals: A, B
Machining: 1, 2, 3, 4, 5s, 6, 7
Finishing: 1, 2, 3s, 4, 5s, 6s, 7s
Assembly: Yes

Ajax Die Casting & Mfg. Co.
2002 E. 6th St.
Tulsa, Okla.
Metals: A, B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3s, 4s, 5, 6
Assembly: Yes

Akron Presform Mold Co.
2038 Main St.
Cuyahoga Falls, Ohio
Metals: A, B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 5, 6
Assembly: Yes

Albany Chicago Co.
3253 S. Normal
Chicago 16, Ill.
Metals: B
Machining: 1, 6, 7
Finishing: 1, 2, 3, 4, 5
Assembly: Yes

Allen-Stevens Corp.* **
62nd St. & 34th Ave.
Woodside 77, N. Y.
Metals: B
Machining 1, 2, 3, 4, 5s, 6s, 7s
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s
Assembly: Yes

Alliance Tool & Die Casting Corp.
2932 W. Burleigh St.
Milwaukee 10, Wis.
Metals: B
Machining: 1, 2, 3, 4, 6
Finishing: 1, 2s, 3s, 4s, 5s, 6, 6s, 7s

Allied Die Cast Corp.
7080 N.W. 37 Ct.
Miami, Fla.
Metals: A, B
Machining: 1, 1s, 2s, 3, 3s, 4, 4s, 5, 7
Finishing: 1, 2, 3s, 4, 5s, 6
Assembly: Yes

Allied Machine & Engineering Co.
401 So. Delaney Rd.
Owosso, Mich.
Metals: A, C
Machining: 1, 2, 3, 4, 5s, 6, 7
Finishing: 1, 2, 3s, 4, 5s, 6s, 7s
Assembly: Yes

Alloy Die Casting Co.*
2211 Firestone Blvd.
Los Angeles 2, Calif.
Metals: A, B
Machining: 1, 1s, 2, 2s, 3, 3s, 4, 4s, 5
5s, 6, 6s
Finishing: 1, 1s, 6, 6s
Assembly: Yes

Alpha Industries
Die Casting Div.
1300 Wheatland Ave.
Logansport, Ind.
Metals: A
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 4, 6
Assembly: Yes

Aluminum Company of America*
Mannheim Rd. & Madison St.
Bellwood, Ill.
Metals: A, C

Aluminum Company of America*
South Ave.
Garwood, N. J.
Metals: A, C
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 6
Assembly: Yes

Aluminum Die Cast Foundries, Inc.
Redkey, Indiana
Metals: A, B
Machining: 1, 2s, 3s, 4s, 5s, 6s, 7
Finishing: 1, 5, 6

Aluminum Die Casting Co.*
3452 San Fernando Rd.
Los Angeles 65, Calif.
Metals: A
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2s, 3s, 4s, 5s, 6, 7s
Assembly: Yes

Aluminum Foundries, Inc.
Winchester, Ind.
Metals: A, C, D
Machining: 1, 2s, 3s, 4s, 5s, 6s, 7
Finishing: 1, 2, 3s, 4s, 5, 6

Ambrit Industries* **
1288 Los Angeles St.
Glendale 4, Calif.
Metals: A, B, E
Machining: 1, 2, 3, 4, 5s, 6, 7
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s
Assembly: Yes

for key see page 67

American Aluminum Casting Co.*
305 Coit St.
Irvington, N. J.
Metals: A
Machining: 1, 7
Finishing: 1

American Cabinet Hardware Corp.
4000 Auburn St.
Rockford, Ill.
Metals: B
Machining: 1, 3, 4, 5
Finishing: 1, 2, 3, 4, 5, 6
Assembly: Yes

American Casting Mfg. Corp.
30 Main St.
Brooklyn, N. Y.
Metals: E, F
Machining: 1, 2, 3, 4, 7
Finishing: 1

American Die Casting Co.
850 Pannell St., N. W.
Grand Rapids 4, Mich.
Metals: B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s
Assembly: Yes

American Flange & Mfg. Co., Inc.
825 S. Kilpatrick Ave.
Chicago 44, Ill.
Metals: B

Anderson Die Casting Co.* **
1000 E. 60th St.
Los Angeles 1, Calif.
Metals: A, B, C, D
Machining: 1, 2, 3, 4, 5s, 6, 7
Finishing: 1, 2s, 3s, 4s, 5s, 6, 7s
Assembly: Yes

Joe Anderson Diecasting Co.
2600 S. Delaware
Denver 23, Colo.
Metals: B
Machining: 1, 2, 3, 4
Finishing: 1, 6
Assembly: Yes

Anderson Tool & Mfg. Co.
3450 N. Kostner Ave.
Chicago 41, Ill.
Metals: A, B
Machining: 1, 2s, 3, 4s, 5s, 6s, 7s
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s
Assembly: Yes

Apex Die Cast Co.
2375 E. 8 Mile Rd.
Warren, Mich.
Metals: B
Machining: 1, 2, 3, 4, 6
Finishing: 1

Apex Die Casting Co.
P. O. Box 8
Troy, Ohio
Metals: A

Argo Die Casting, Inc.
106 Powerhouse Rd.
Roslyn Hts., L. I., N. Y.
Metals: B, E
Machining: 1, 2, 3, 4, 5, 6, 7s
Finishing: 1s, 2, 3s, 4s, 5s, 6s, 7s

Arkansas Die Casting Co.
Box 26
Harrison, Ark.
Metals: A, B
Machining: 1, 2, 3, 4, 7
Finishing: 4, 6

Arrow-Acme Corp.
Box 278
Webster City, Iowa
Metals: A, B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1

Arrow Aluminum Castings Co.
3135 Berea Rd.
Cleveland 11, Ohio
Metals: A
Machining: 1, 1s, 2s, 3s, 4s, 5s, 6s, 7
Finishing: 1, 2, 3s, 4s, 5s, 6s, 7s

Art Jack Co.
196 Murray St.
Newark 5, N. J.
Metals: B
Machining: 1, 2, 3, 4s, 5s, 6s, 7s
Finishing: 1, 2s, 3s, 4s, 5s, 6, 7s

Atherton Tool, Die & Mold Co.
1614 S. Sycamore St.
Santa Ana, Calif.
Metals: A, B, C, D
Machining: 1, 2, 3s, 4s, 5s, 6s, 7s
Finishing: 1s, 2s, 3s, 4s, 5s, 6s, 7s
Assembly: Yes

Atlantic Die Casting
2585 Beaufait
Detroit 7, Mich.
Metals: A, B
Machining: 1, 7
Finishing: 1
Assembly: Yes

Atlas Die Casting Co.* **
362 N. Kelly Ave.
Germantown, Ohio
Metals: A, B
Machining: 1, 2, 3, 4, 5, 6
Finishing: 1, 6

Atomic Die Casting Corp.
7817 S. Claremont Ave.
Chicago 20, Ill.
Metals: A, B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3, 3s, 4, 4s, 5, 5s, 6, 6s 7, 7s

Auburn Diecast Corp.
1632 W. Midland Rd.
Auburn, Mich.
Metals: A, C
Machining: 1, 2, 3, 4, 6s, 7s
Finishing: 1, 2, 3s, 4s, 5s, 6, 7s
Assembly: Yes

Auel Industries
Herminie, Pa.
Metals: B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2s, 3s, 4, 6
Assembly: Yes

Aurora Metal Co.
614 West Park Ave.
Aurora, Ill.
Metals: D
Machining: 1, 2, 3, 4, 5s, 6, 7s
Finishing: 1, 2s, 3s, 4s, 5s, 6s

Austin Die Casting Co.
16837 S. Broadway
Gardena, Calif.
Metals: B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s
Assembly: Yes

Automotive Accessory Co., Ltd.
1551 Erin St.
Winnipeg, Manitoba, Canada
Metals: B
Machining: 1, 2, 3, 4, 6, 7
Finishing: 1, 3
Assembly: Yes

Badger Die Casting Corp.* **
201 W. Oklahoma Ave.
Milwaukee, Wis.
Metals: A, B
Machining: 1, 2, 3, 4, 5, 6s, 7s
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s
Assembly: Yes

Banthrico Industries, Inc.
17 N. Desplaines St.
Chicago 6, Ill.
Metals: B, E
Machining: 1, 4, 6, 7
Finishing: 1, 2, 3s, 4, 6, 7s
Assembly: Yes

Barber Die Casting Co., Ltd.
P. O. Box 416, Postal Stn. "B"
Hamilton, Ont., Can.
Metals: A, B, C, D
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3s, 4s, 5, 6, 7s
Assembly: Yes

Basic Aluminum Castings Co.
1325 E. 168th St.
Cleveland 10, Ohio
Metals: A
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 6

Bassick-Sack Div.
Stewart-Warner Corp.
P. O. Box 4237
Winston-Salem, N. C.
Metals: B
Machining: 1, 4, 5, 6, 7
Finishing: 1, 2, 3, 4, 6, 7s
Assembly: Yes

Beaut Mfg. Co.
7500 Tonnelle Ave.
North Bergen, N. J.
Metals: B, E
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3s, 4, 5, 6, 7s
Assembly: Yes

Benda Tool & Model Works
1444 4th St.
Berkeley 10, Calif.
Metals: A, B, C, D, E, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 1s, 2s, 3s, 4s, 5s, 6, 6s, 7s
Assembly: Yes

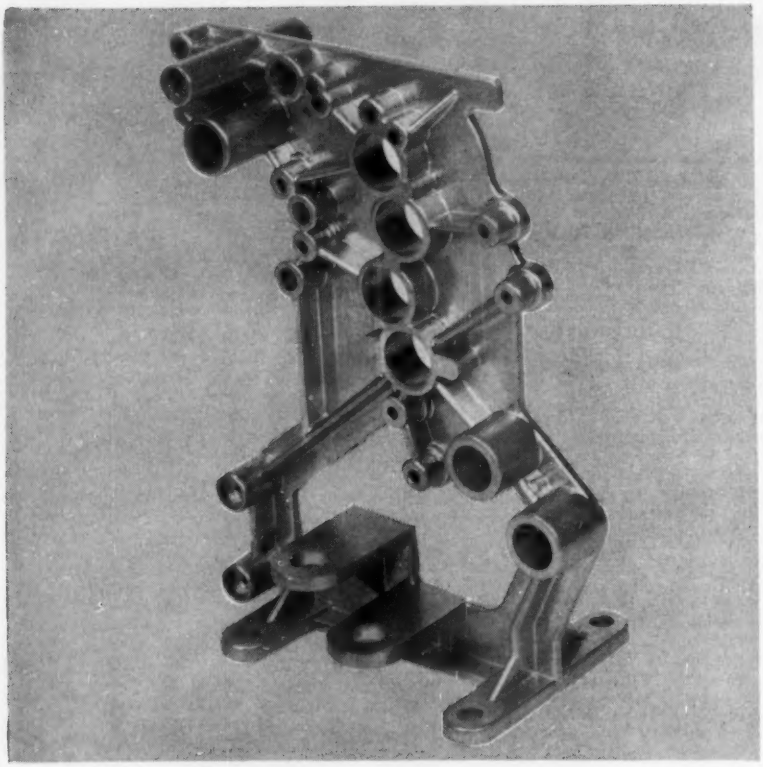
Bendix Foundaries
Bendix Aviation Corp.
Teterboro, New Jersey
Metals: A, C

Benton Harbor Malleable Industries Inc.
171 Graham Ave.
Benton Harbor, Mich.
Metals: A, B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s
Assembly: Yes

Binkley Die Casting Co., Ltd.
175 Samuelson St.
Galt, Ont., Can.
Metals: B
Machining: 1, 2, 3, 5, 6
Finishing: 1, 4
Assembly: Yes

Blaking Co.
921 N. E. Main St.
Minneapolis 13, Minn.
Metals: B, E, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3, 4, 6
Assembly: Yes

for key see page 67



What other process could do it so well?

All things considered, there's really only one *best* way to produce this typical die casting application.

When you figure that it must be built at the lowest possible unit cost, must use a production method that is highly flexible to accommodate the unusual shape, and must maintain a variety of close tolerances . . . only die casting *could* do the job.

Working closely with Twin City engineers, this manufacturer *designed* for die casting to get the maximum out of the process. By thinking in terms of die casting right from the drawing boards he eliminated many production and finishing jobs, saved on unit costs, saved on machining.

Possibly you're producing a part by some more costly, less flexible, less accurate process than die casting. If you think that might be true, contact Twin City Die Castings Company. Twin City engineers can probably save you money. They have for hundreds of customers.

. . . only DIE CASTING can

✓ cut your costs

✓ offer such flexibility

✓ provide such accuracy

FOR PROOF . . . CALL, WRITE OR WIRE:

TWIN CITY DIE CASTINGS CO.

3351 TALMAGE AVENUE S. E. • MINNEAPOLIS 14, MINNESOTA

TELEPHONE MIDWAY 6-7528

DIE CASTING RESEARCH FOUNDATION PARTICIPANT

Circle No. 119 on Reader Service Card

Blue Ridge Pressure Casting, Inc.*
Bridge St.
Lehighton, Pa.
Metals: A, B, D
Machining 1, 2, 3, 4, 5

Brillcast, Inc.
2544 Thornwood, S. W.
Grand Rapids 9, Mich.
Metals: A, B
Machining: 1, 2, 3, 4, 5s, 6, 7s
Finishing: 1, 2, 2s, 3s, 4s, 5s, 6s, 7s
Assembly: Yes

Bruce Mfg. & Molding Co., Inc.
Atwater St.
Plantsville, Conn.
Metals: A, B
Machining: 1, 2, 3, 4, 6, 7
Finishing: 1, 2, 6
Assembly: Yes

Bruin Mfg. Co.
P. O. Box 121
Marshalltown, Iowa
Metals: A, B
Machining: 1, 2, 3, 4, 5, 6
Finishing: 1, 2, 6
Assembly: Yes

Bucy Diecasting
625 S. Glenwood Pl.
Burbank, Calif.
Metals: A, B, C, D

Burton Die Casting Co.
6427 Davison Rd.
Davison, Mich.
Metals: B
Machining: 1, 2, 3, 4, 5,
Assembly: Yes

C. & W. Metal Finishing, Inc.
3525 S. Greenwood Ave.
Los Angeles 22, Calif.
Metals: B
Finishing: 1, 2, 3, 4, 5, 6

Caldwell Casting Co., Inc.
Market St.
Cambridge, Md.
Metals: B
Machining: 1, 2, 3, 4
Finishing: 1s, 2s, 3s, 4s, 5s, 6s

Calko Die Casting Co.
43 Sunnyside Ave.
P. O. Box 552
Stamford, Conn.
Metals: B, E, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1s, 2s, 3s, 4s, 5s, 6s, 7s
Assembly: Yes

Callen Mfg. Corp.* **
1425 N. 1st Ave.
Maywood, Ill.
Metals: B
Machining: 1, 2, 3, 4, 5s, 6, 7s
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s
Assembly: Yes

Camp Aircraft Parts
1133-39 McCarthy Hwy.
Newark 2, N. J.
Metals: A, B
Machining: 1, 2, 3, 4, 7
Finishing: 1, 2
Assembly: Yes

John J. Carey Co.
2194-96 Bridge St.
Philadelphia 24, Pa.
Metals: B
Machining: 1, 2, 3, 4, 6, 7
Finishing: 1, 2, 6

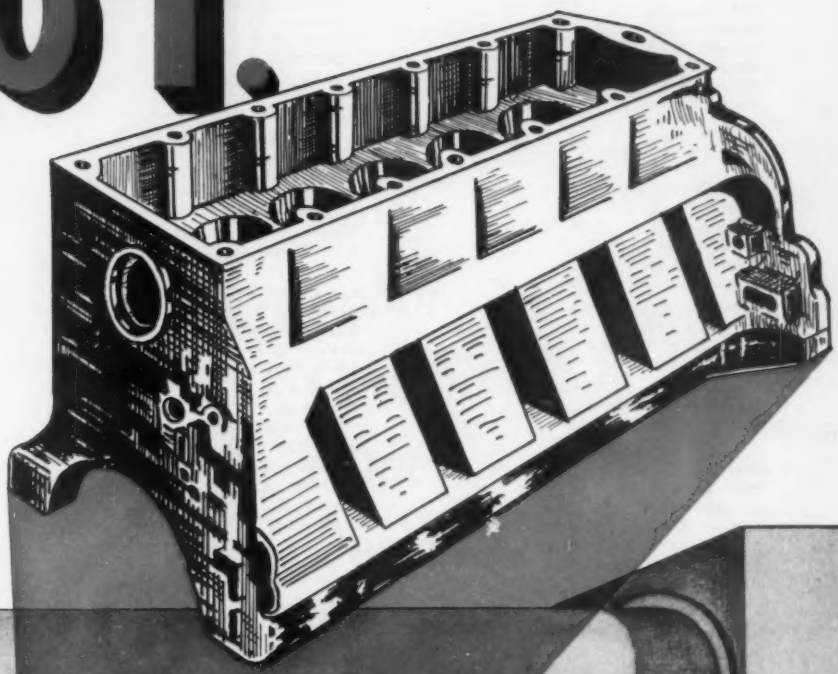
for key see page 67

DIE CASTING MACHINES

clamping force:

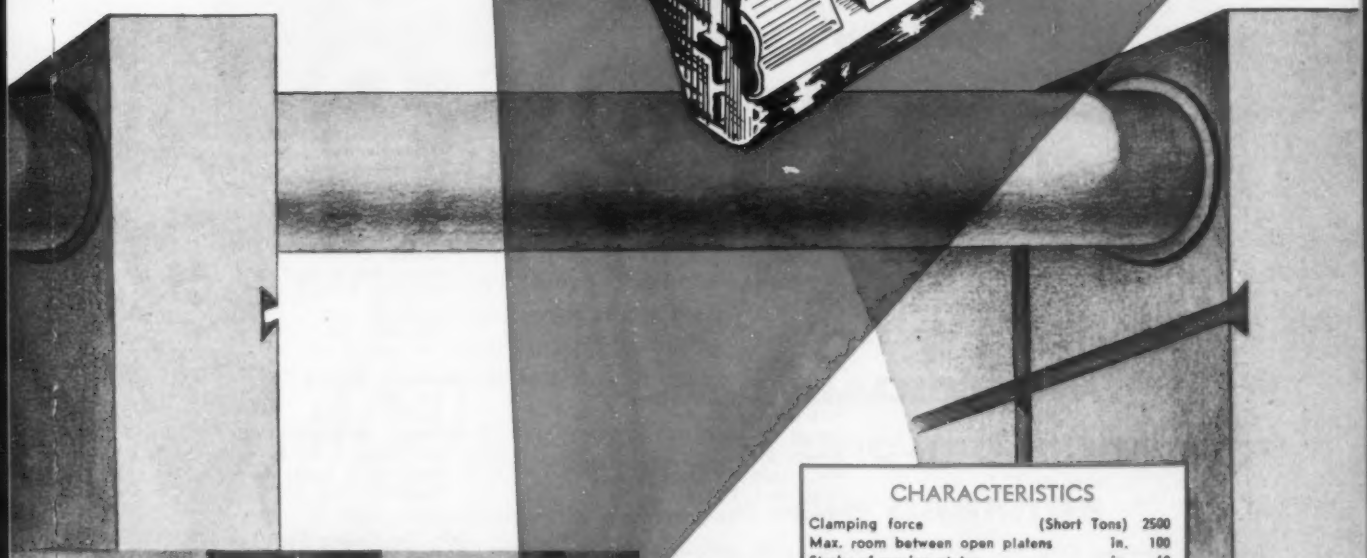
2500 T.

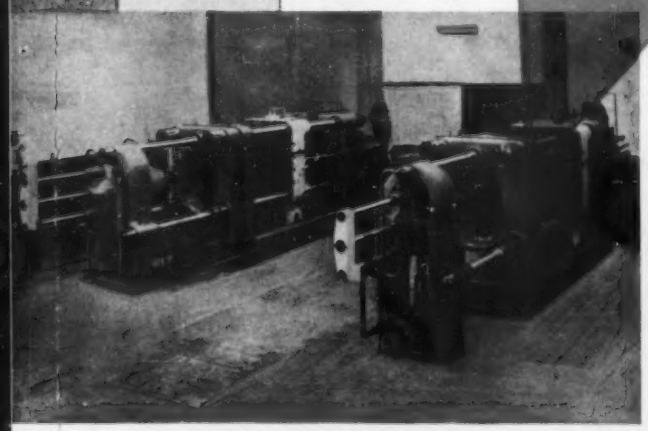
hydro-mechanical clamping



LARGE PLATENS

BIG ROOM





CHARACTERISTICS

Clamping force	(Short Tons)		2500
Max. room between open platens		in.	100
Stroke of moving platen		in.	60
Useful size between platens		in.	78
Thickness of die	max.	in.	60
	min.	in.	40
Useful size between tie bars (vertical)		in.	52
Injection capacity (based on Al.)		up to 100 lbs.	
Specific pressure on the material		up to 28200 lbs/sq. in.	

TRIULZI

NOVATE (MILANO) ITALY

Via Vialba 56 - Telefoni: 3.491.661/2/3/4 - 3.491.785/6/7/8
Indirizzo Telegrafico: TRIULZIPRES - NOVATE MILANESE

Circle No. 88 on Reader Service Card

Carolina Foundry Co.
Box 635
Charlotte, N. C.
Metals: A
Machining: 1, 2, 3, 4, 6
Finishing: 1, 2, 6

Carpenter Die Casting Co., Ltd.
474 Burlington E.
Hamilton, Ont., Can.
Metals: A, B, E, F
Machining: 1, 2, 3, 4, 5s, 6, 7s
Finishing: 1, 2, 3, 3s, 4, 4s, 5s, 6, 7s
Assembly: Yes

Casper's Machine Shop
1047 77th Ave.
Oakland 21, Calif.
Metals: A, B, D
Machining: 1, 2, 3, 4, 5, 6
Finishing: 1, 2, 6
Assembly: Yes

Cast-O-Matic Corp.* **
P. O. Box 1172
Syracuse 1, N. Y.
Metals: A, B
Machining: 1, 2, 3, 4, 5, 7
Finishing: 1, 2, 3s, 4s, 6
Assembly: Yes

Central Die Casting Mfg. Co.* **
2937 W. 47th St.
Chicago 32, Ill.
Metals: A, B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3s, 4, 5s, 6, 7s
Assembly: Yes

Centr-O-Cast & Engineering
45 St. Jean St.
Detroit 14, Mich.
Metals: A
Finishing: 1

Century Die Casting Co.*
2629 Fletcher St.
Chicago 18, Ill.
Metals: A, B
Machining: 1, 2, 3, 4s, 5s, 6s, 7s
Finishing: 1, 6

Char-Lynn Co.*
2843 26th Ave., S.
Minneapolis 6, Minn.
Metals: A
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2s, 3s, 4s, 5s, 6, 7s
Assembly: Yes

Chautauqua Hardware Corp.
31 Water St.
Jamestown, N. Y.
Metals: A, B, E, F
Machining: 1, 2, 3, 4, 5
Finishing: 1, 2, 3, 4, 6
Assembly: Yes

Chicago Die Casting Mfg. Co.
2514 W. Monroe St.
Chicago 12, Ill.
Metals: B, E
Machining: 1, 5, 6
Finishing: 4
Assembly: Yes

Chicago Expansion Bolt Co.
1338 W. Concord Pl.
Chicago 22, Ill.
Metals: E
Machining 1
Assembly: Yes

Chicago White Metal Casting Co.* **
5239 W. Grand Ave.
Chicago 39, Ill.
Metals: A, B
Machining: 1, 2s, 3, 4s, 5, 5s, 6s, 7
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s

Cincinnati Die Casting Co.* **
2117 Spring Grove
Cincinnati 14, Ohio
Metals: A, B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s
Assembly: Yes

Coast Die Casting Co.
5752 Joanne Pl.
Culver City, Calif.
Metals: A, B
Machining: 1, 2, 3, 4, 6
Finishing: 1, 2s, 3s, 4s, 6s
Assembly: Yes

Comet Metal Products Co., Inc.
91-05 132 St.
Richmond Hill 18, N. Y.
Metals: B, E, F
Machining: 1, 2s, 3s, 4s, 5s, 6s, 7s
Finishing: 1, 2, 3s, 4, 5s, 6s, 7s
Assembly: Yes

Conetta Tool & Die Co.
73 Sunnyside Ave.
Stamford, Conn.
Metals: B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 2s, 3s, 4s, 5s, 6s, 7s
Assembly: Yes

Conneaut Die Casting Co.* **
618 Sandusky St.
Conneaut, Ohio
Metals: A, B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3s, 4s, 5s, 6s, 7s
Assembly: Yes

Consolidated Die Cast Corp. of America
P. O. Box 330
Dowagiac, Mich.
Metals: A, B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2s, 3s, 4, 5s, 6s, 7s
Assembly: Yes

Continental Die Casting Corp.* **
9615 Grinnell Ave.
Detroit 13, Mich.
Metals: B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3, 4,
Assembly: Yes

Continental Metallifacture Co.
414 Pine St.
Scranton, Pa.
Metals: A, B, E
Machining: 1, 2, 3, 4, 5s, 6s, 7s
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s
Assembly: Yes

Cordray Die Casting Co.
6565 S. Wilson St.
Los Angeles 1, Calif.
Metals B, E
Machining: 1, 2, 3, 4, 6, 7
Finishing: 1, 2, 4, 6
Assembly: Yes

Cosmopolitan Die Cast Products
46 Etruria St.
Seattle 9, Wash.
Metals: B
Machining: 1, 2, 3, 4, 5s, 6s, 7
Finishing: 1, 2, 3s, 4, 5s, 6s, 7s
Assembly: Yes

Coulter Mfg. Co., Ltd.
28 Richmond St. W, P. O: Box 190
Oshawa, Ont., Can.
Metals: B
Machining: 1, 3, 5
Finishing: 2, 3, 4
Assembly: Yes

Crescent Co.
20 Central Ave.
Pawtucket, R. I.
Metals: E

Crown City Die Casting Co.
84 N. Fulton Ave.
Pasadena 8, Calif.
Metals: A, B
Machining: 1, 2, 3, 4, 7
Assembly: Yes

Crown Novelty Works
85-15 Liberty Ave.
Ozone Park 17, N. Y.
Metals: B, E
Machining: 1, 2, 3, 4, 6, 7
Assembly: Yes

Dallas Die Casting Co.
334 Rock Island
Dallas 7, Tex.
Metals: A, B
Machining: 1, 2, 3, 4, 5, 7
Finishing: 1, 2, 3, 4, 5, 6, 7s
Assembly: Yes

Daniel Co., Edward W.
4050 St. Clair Ave.
Cleveland 3, Ohio
Metals: B
Machining: 1, 4, 7
Finishing: 3s
Assembly: Yes

Davis Products Corp.
601-39th St.
Brooklyn 32, N. Y.
Metals: B
Machining: 1, 1s, 2, 3, 4, 5, 6, 7, 7s
Finishing: 1, 1s, 2, 2s, 3, 3s, 4, 4s, 5, 5s 7, 7s
Assembly: Yes

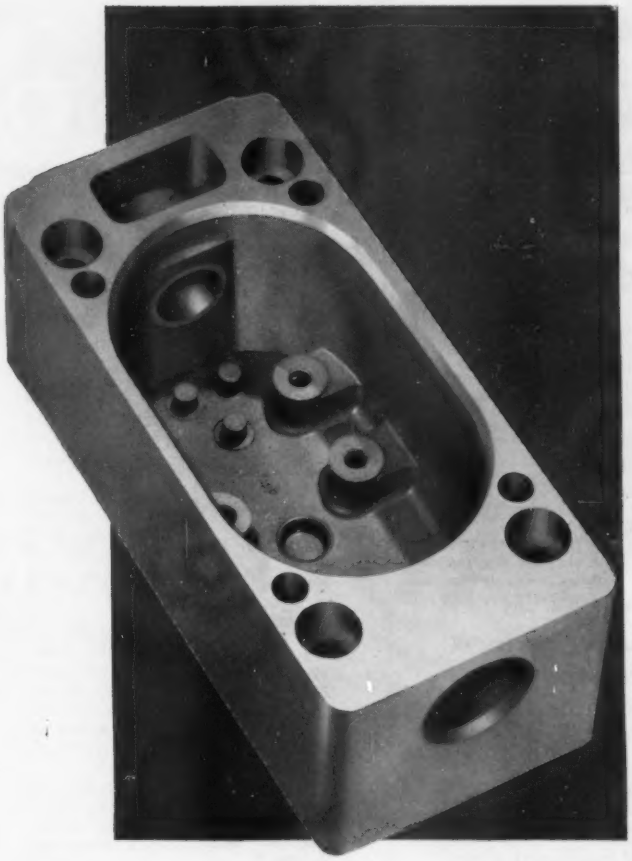
Dayton Die Casting Co.
111 Front St.
Dayton 2, Ohio
Metals: A, B, E
Machining: 1, 2s, 3s, 4s, 5s, 6s, 7s
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s
Assembly: Yes

Delta Die Casting Corp.*
9393 W. Seymour Ave.
Schiller Park, Ill.
Metals: A
Machining: 1, 2, 3, 4s, 5s, 6s, 7s
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s

A. J. Demoude Co.
P. O. Box 392
Beaverton, Oreg.
Metals: B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3s, 4, 5, 6
Assembly: Yes

Deroy Mfg. Co.
9208 Atlantic Ave.
South Gate, Calif.
Metals: B
Machining: 1, 4, 7
Finishing: 5, 6
Assembly: Yes

for key see page 67



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Circle No. 62 on Reader Service Card

Detroit Die Casting Corp.* **
597 Beaufait
Detroit, Mich.
Metals: B
Machining: 1
Finishing: 1s, 2s, 3, 4s

Dialoy Inc.
214 S. Clinton St.
Chicago 6, Ill.
Metals: A, B, D
Machining: 1, 2, 3
Finishing: 1

Di-Cast Mfg. Co.
15 Bradford Place
Brockton, Mass.
Metals: A, B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1

Die Cast & Forge Corp.
190 Petersville Rd.
New Rochelle, N. Y.
Metals: B, E
Machining: 1, 2s, 3s, 4s, 5s, 6s, 7s
Finishing: 1, 2s, 3s, 5s, 6s
Assembly: Yes

Die Cast Mfg. Co.
10138½ E. Rush St.
El Monte, Calif.
Metals: B
Machining: 1
Finishing: 1, 2s, 3s, 4s, 6, 7s

Die Cast Products, Inc.* **
621 W. Rosecrans Ave.
Gardena, Calif.
Metals: A, B
Machining: 1, 2, 3, 4, 5s, 6s, 7, 7s
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s
Assembly: Yes

Die Cast Products, Inc.
4040 Hough Ave.
Cleveland 3, Ohio
Metals: A, B, E
Machining: 1, 2s, 3, 4s, 5, 6s, 7s
Finishing: 1s, 2s, 3s, 4s, 5s, 6s, 7s

Die Cast Products Ltd.
1085 Winnipeg Ave.
Winnipeg 3, Manitoba, Can.
Metals: B
Machining: 1
Finishing: 1, 2, 3, 4, 6

Die Casting Corp. of Florida
3000 N. W. 75th St.
Miami, Fla.
Metals: A, B
Machining: 1
Finishing: 3s, 5s

Diecast Corp.
522-24 Hupp Ave.
Jackson, Mich.
Metals: A, B
Machining: 1, 2, 3, 4, 5
Finishing: 1, 2, 4, 5

Diecasters, Inc.
90 Herbert Ave.
Closter, N. J.
Metals: A, B, D
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s
Assembly: Yes

Dieco Die Casting Corp.
59-27 Decatur St.
Brooklyn 17, N. Y.
Metals: B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s
Assembly: Yes

Dietz Die Casting
2031 North Seaman Ave.
South El Monte, Calif.
Metals: A, B, D
Machining: 1, 2, 3, 4, 6
Finishing: 1

Di Salle Plating & Die Casting, Inc.
2851 S. Ave.
Toledo, Ohio
Metals: B
Machining: 1, 2, 3, 7
Finishing: 1, 2, 3, 4, 6
Assembly: Yes

Dixie Die Casting Corp.
P. O. Box 1208
Reidsville, N. C.
Metals: A, B
Machining: 1, 2, 3, 4, 5s, 6, 7
Finishing: 1, 2s, 3s, 4s, 5s, 6 7s

Doehler-Jarvis Div.* **
National Lead Co.
1945 Smead Ave.
Toledo 1, Ohio
Metals: A, B, C, D
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 2, 3, 4, 6
Assembly: Yes

Dollin Corp.* **
600 S. 21st St.
Irvington, N. J.
Metals: A, B
Machining: 1, 2, 3, 4, 5, 7
Finishing: 1, 2s, 3s, 4s, 5s, 6s

Dominion Die Casting Ltd.
Libby St.
Wallaceburg, Ont., Can.
Metals: A, B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2s, 3s, 4s, 5, 6, 7s
Assembly: Yes

Dominion Lock Co., Ltd.
7301 Decarie Blvd.
Montreal, Que., Can.
Metals: A, B
Machining: 1, 2, 3, 4, 5
Finishing: 1, 2, 3s, 4, 5, 6
Assembly: Yes

Dormeyer Corp.
Precision Parts Div.
4912 West Grand Ave.
Chicago 39, Ill.
Metals: A, B

Douglas Co.
62 12th Ave., S.
Minneapolis 4, Minn.
Metals: B
Machining: 1, 2, 3, 4, 5s, 6, 7
Finishing: 1, 2, 3, 4, 5, 6s, 7s
Assembly: Yes

Dow Metal Products Co., The*
Div. Dow Chemical Co.
Midland, Mich.
Metals: A, C
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3, 4, 5, 6, 7

Dowst Mfg. Co.
600 N. Pulaski Rd.
Chicago 24, Ill.
Metals: B
Machining: 1, 2, 3, 4, 4s, 5s, 6s, 7s
Finishing: 1s, 2s, 3, 3s, 4, 5s, 6s, 7s
Assembly: Yes

Duane Specialties Ltd.
2 Johnson St.
Newark 5, N. J.
Metals: B
Machining: 1, 2, 3, 4s, 5s, 6, 7
Finishing: 1s, 2s, 3s, 4s, 5s, 6s, 7s
Assembly: Yes

Du Page Die Casting & Fabrication Co.
8049 N. Ridgeway
Skokie, Ill.
Metals: A, B
Machining: 1, 2, 3, 4
Finishing: 1, 2, 3s, 4s

Dura Corp.
Toledo Div.
4500 Detroit Ave.
Toledo 12, Ohio
Metals: B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3, 4, 4s
Assembly: Yes

Durall Mfg. Co.
Box 866
Chula Vista, Calif.
Metals: B
Machining: 1, 1s, 2, 2s, 3, 3s, 4, 4s, 6 6s, 7, 7s
Finishing: 1, 1s, 2, 2s, 3, 3s, 4, 4s, 5, 5s 6, 6s
Assembly: Yes

Du-Wel Metal Products Co.* **
1950 Thomas Rd.
Bangor, Mich.
Metals: A, B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3, 4, 5
Assembly: Yes

Dynamic Die Casting Co.
21641 Meyer Rd.
Oak Park, Mich.
Metals: B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3s, 4, 5s, 6s, 7s
Assembly: Yes

E. B. Metal Products Co., Inc.
12-12 Bridge Plaza, S.
Long Island City 1, N. Y.
Metals: B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3s, 4, 5, 6, 7s
Assembly: Yes

Eastern Casting Corp.
64 S. William St.
Newburgh, N. Y.
Metals: A, B
Machining: 1, 2, 3, 4, 5, 6, 7s
Finishing: 1, 2, 3s, 4s, 5s, 6s, 7s
Assembly: Yes

Eastern Non-Ferrous Foundries, Inc.
2811 Amber St.
Philadelphia 34, Pa.
Metals: B
Machining: 1, 2s, 3s, 4s, 5s, 6s, 7
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s

Eggers Co., Robert H.
4701 Perkins Ave.
Cleveland 3, Ohio
Metals: A, B
Machining: 1, 2, 3, 4, 5s, 6, 7s
Finishing: 1, 2, 3s, 4s, 5s, 6s, 7s
Assembly: Yes

Ehrhart Die Casting Co.
K. O. K. X. Rd.
Hamilton, Ill.
Metals: B
Machining: 1, 2, 3, 4, 5, 7
Finishing: 1, 2, 3s, 4, 5, 6
Assembly: Yes

for key see page 67

Eklind Tool & Mfg. Co.
2627 N. Western Ave.
Chicago 47, Ill.
Metals: B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s
Assembly: Yes

El Cajon Die Casting & Mfg. Co.
590 Marshall St.
El Cajon, Calif.
Metals: B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 6
Assembly: Yes

Electric Auto-Lite Co., The
Woodstock Div.
501 Clay St.
Woodstock, Ill.
Metals: A, B
Machining: 1, 2, 3, 4, 5, 6
Finishing: 1, 2, 3, 4, 5, 5s, 6
Assembly: Yes

El Monte Tool & Die Cast, Inc.* **
2425 N. Tyler Ave.
El Monte, Calif.
Metals: A, B
Machining: 1, 2, 3, 4, 6, 7
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s

Empire Die Casting Co.
19800 Miles Ave.
Cleveland 28, Ohio
Metals: A, B, C
Machining: 1, 2, 3, 4
Finishing: 1
Assembly: Yes

Engineering Cast Products
17501 Swift Ave.
Detroit 3, Mich.
Metals: A, B, D
Finishing: 1

Engineers Tool & Mfg. Co.* **
7 Islandbrook Ave.
Bridgeport 6, Conn.
Metals: B
Machining: 1, 2s, 3s, 4s, 5s, 6s, 7s
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s
Assembly: Yes

Ertl Co., Inc.
2490 Wilbricht Rd.
Dubuque, Iowa
Metals: A, B
Machining: 1, 2s, 3, 3s, 4s, 5s, 6, 6s, 7
7s
Finishing: 1, 2, 2s, 3s, 4, 5s, 6, 7s
Assembly: Yes

Esquire Novelty Corp.
151 West Side Ave.
Jersey City, N. J.
Metals: B
Assembly: Yes

Falconer Metal Specialties Co., Inc.* **
Winchester Rd.
Lakewood, N. Y.
Metals: A, B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2s, 3s, 4, 4s, 5, 5s, 6, 7s
Assembly: Yes

Fall River Tool & Die Co.
994 Jefferson St.
P. O. Box 13, Fl. Sta.
Fall River, Mass.
Metals: A, B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3s, 4s, 5s, 6s, 7s
Assembly: Yes

for key see page 67

perfect
MELT AND CAST PIECES UP TO 50 POUNDS IN THIS—

Kinney®
HIGH VACUUM FURNACE

Above—Cross section of vacuum molded billet. Below—The same metal but cast in atmosphere.

When you can't afford to let gases reduce the quality of your castings and run reject rates out of sight, the practical money-making aspects of KINNEY High Vacuum Furnaces assert themselves. The 50 pound model shown has found excellent application with high nickel steel, carbide tool steel, uranium and other metals. But, the value of this KINNEY Furnace is not confined to the more exotic metals . . . low alloy steels are dramatically improved by vacuum processing.

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You can introduce alloying material or add to the melt while maintaining a high vacuum in this versatile furnace. You can also operate the furnace using moderate positive pressure and an inert gas atmosphere.

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Name_____

Company_____

Address_____

City_____ Zone____ State____

Circle No. 73 on Reader Service Card

Federal Aluminum Foundry Co.
411 Williams St.
Camden, N. J.
Metals: B, E, F
Machining: 1, 2s, 3s, 4s, 5s, 6s, 7
Finishing: 1, 2, 2s, 3s, 4s, 5s, 6, 7s

Federal Die Casting Co.* **
2222-32 Elston Ave.
Chicago, Ill.
Metals: A, B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 4, 6

Ferrell Mfg. Co.
P. O. Box 96
Groton, N. Y.
Metals: B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3s, 4
Assembly: Yes

Fisher Gauge Works, Ltd.
Peterborough
Ontario, Canada
Metals: A, B, E, F
Machining: 1, 2
Assembly: Yes

Florida Fishing Tackle Mfg. Co., Inc.
2100 First Ave. S.
St. Petersburg, Fla.
Metals: A, D, E
Machining: 1, 2, 4, 6, 7
Finishing: 1, 2, 3, 4
Assembly: Yes

Form-A Die Casting Corp.
100 Felton St.
Waltham 54, Mass.
Metals: A, B
Machining: 1, 2, 3s, 4s, 5, 6s, 7s
Finishing: 1, 2, 3s, 4s, 5s, 6s, 7s

Forster-Appelt Mfg. Co., Inc.
82 E. Lanark Ave.
Lanark, Ill.
Metals: A, C, E
Machining: 1, 2, 3, 4, 6, 7
Finishing: 1, 2
Assembly: Yes

Fort Recovery Industries, Inc.
Fort Recovery, Ohio
Metals: A, B
Machining: 1
Finishing: 1, 2, 5, 6
Assembly: Yes

Fort Worth Die Cast Co., Inc.
1213 E. Daggert
Fort Worth, Tex.
Metals: A, B, E, F
Machining: 1, 2, 3, 4, 5, 6, 7s
Finishing: 1, 2, 3, 4s, 5s, 6, 7s
Assembly: Yes

Francis Co., A. W.
Box 266
Somerset, Pa.
Metals: B
Machining: 1, 2, 3, 4, 5, 7
Finishing: 1, 2, 3
Assembly: Yes

Frantz Mfg. Co.
1200 Camden Ave., S.W.
Canton 6, Ohio
Metals: A, B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3s, 4, 4s, 5s, 6s, 7s
Assembly: Yes

Future Products Co.* **
3625 N. Mississippi Ave.
Portland 17, Oreg.
Metals: B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 2s, 3s, 4s, 6, 6s
Assembly: Yes

Gemco Mfg. Co., Inc.
501 S. Lipan St.
Denver 23, Colo.
Metals: A, B, E, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 6
Assembly: Yes

General Cast Products, Inc.
2211 Waverly Ave.
Swissvale, Pa.
Metals: B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 4, 5, 6

General Die Cast Co.
10750 Capital
Oak Park 37, Mich.
Metals: B
Machining: 1, 2s, 3s, 4s, 5s, 6s, 7s
Finishing: 1, 2, 3, 4s, 5s, 6s, 7s
Assembly: Yes

General Diecasters, Inc.
6212 Akron Peninsula Rd.
Peninsula, Ohio
Metals: B
Machining: 1, 2, 3, 4, 5, 6
Finishing: 6
Assembly: Yes

General Electric Co.
Erie Foundries
Erie, Pa.
Metals: D

for key see page 67

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Leiman Vacuum Pumps need no attention, except oiling. Run for years without repairs or replacement.

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Circle No. 59 on Reader Service Card

General Electroplating Co.
621 E. Walnut St.
Indianapolis 4, Ind.
Metals: B
Machining: 1, 4, 7
Finishing: 1, 2, 3, 4s, 6s
Assembly: Yes

General Metals Corp.
444 S. 9th Ave.
Mount Vernon, N. Y.
Metals: B
Machining: 1, 2s, 3s, 4s, 5s, 6s, 7s
Finishing: 1, 2s, 3s, 4, 5s, 6s, 7s
Assembly: Yes

General Motors Corp.
Brown-Lipe-Chapin Div.
Town Line Rd.
Syracuse, N. Y.
Metals: A, B
Machining: 1, 2, 3, 4, 5s, 6s, 7s
Finishing: 1, 2, 3, 4, 5, 6, 7s
Assembly: Yes

General Motors Corp.
Central Foundry Div.
Fabricast Plant
P. O. Box 271
Bedford, Ind.
Metals: A, C
Finishing: 1
Assembly: No

General Motors Corp.
Central Foundry Div., Fabricast Plant
Malvern, Ark.
Metals: A

General Motors Corp.
Central Foundry Div.
37 Florence St.
Saginaw, Mich.
Metals: A
Machining: 1, 2, 3, 4, 6, 7
Finishing: 1

General Motors Corp.
Delco Radio Div.
700 E. Firmin St.
Kokomo, Ind.
Metals: B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3, 4, 6
Assembly: Yes

General Motors Corp.
Guide Lamp Div.
P. O. Box 1090
Anderson, Ind.
Metals: B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3, 4, 5, 6, 7
Assembly: Yes

Gibbs Automatic Molding* **
Div. Pierce Industries, Inc.
1105 5th St.
Henderson, Ky.
Metals: A, B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3, 4, 5s, 6, 7
Assembly: Yes

Gorton & MacIntyre
55 So. 3rd Ave.
Mt. Vernon, N. Y.
Metals: B
Machining: 1, 2s, 3s, 4s, 5s, 6s, 7s
Finishing: 1s, 2s, 3s, 4s, 5s, 6s, 7s

Grand Rapids Brass Co.
Div. of Crampton Mfg. Co.
420 W. 50th St., S. W.
Grand Rapids 8, Mich.
Metals: B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3, 4, 5, 6
Assembly: Yes

Grand Rapids Die Casting Co.
2125 Turner Rd.
Grand Rapids 4, Mich.
Metals: A, B
Machining: 1, 2, 3, 4s, 5, 6, 7
Finishing: 1, 2, 3, 4
Assembly: Yes

Grand Steel & Mfg. Co.
1400 W. 14 Mile Rd.
Clawson, Mich.
Metals: A, B
Machining: 1, 2, 3, 4, 5s, 6 7
Finishing: 1, 2, 3, 4
Assembly: Yes

C. M. Grey Industries, Inc.* **
358 Central Ave.
East Orange, N. J.
Metals: A, B, E, F
Machining: 1, 2, 5, 7
Finishing: 1
Assembly: Yes

Gries Reproducer Corp.* **
157 Beechwood Ave.
New Rochelle, N. Y.
Metals: B
Machining: 1, 2, 3, 4, 5, 6
Finishing: 3, 4, 5, 6
Assembly: Yes

Gyle Engineering Co.
6519 Wilson Ave.
Los Angeles 1, Calif.
Metals: A, B, C
Machininig: 1, 2, 3, 4, 6, 7
Finishing: 1
Assembly: Yes

H & S Metal Products Co.
4159 Whiteside St.
Los Angeles 63, Calif.
Metals: A, C
Machining: 1, 2, 3, 4, 6, 7
Finishing: 1, 2
Assembly: Yes

Hadlock & Temte, Inc.
3336 W. Franklin Blvd.
Chicago 24, Ill.
Metals: B
Machining: 1, 3, 4, 5, 7
Finishing: 1, 2s, 3s, 6s
Assembly: Yes

Halex Die Casting Co.
8640 Bessemer Ave.
Cleveland 4, Ohio
Metals: A, B
Machining: 1, 2s, 3, 4, 5, 6s, 7s
Finishing: 1s, 2s, 3s, 4s, 5s, 6s, 7s
Assembly: Yes

Joseph Hall Co.
2121 W. Clearfield St.
Philadelphia, Pa.
Metals: A, B
Machining: 1, 2, 3, 4, 7
Finishing: 1, 2, 4, 6
Assembly: Yes

Hall Level Mfg. Works
1119 E. 4th St.
Austin, Tex.
Metals: B, E
Machining: 1, 2, 3, 4, 6, 7
Finishing: 1, 2, 4
Assembly: Yes

Hamilton Die Cast Co.
240 North "B" St.
Hamilton, Ohio
Metals: A, B
Machining: 1, 2s, 3, 4, 5s, 6s, 7
Finishing: 1, 2, 3, 4, 5, 6, 7s
Assembly: Yes

Hamilton Die Casting Corp.*
2020 Jericko Turnpike
New Hyde Park, N. Y.
Metals: A, B
Machining: 1, 2, 3, 4, 5s, 6s, 7
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s

Hamilton Machine Shop
7829 Hamilton Ave.
Pittsburgh 21, Pa.
Metals: B, E
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3s, 4s, 5s, 6s, 7s

Hamlin Products, Inc.
P. O. Box 2016
Little Rock, Ark.
Metals: A
Machining: 1
Finishing: 1, 2, 6
Assembly: Yes

Hammond Die Casting Corp.
140 Stewart St.
Ypsilanti, Mich.
Metals: B
Machining: 1, 2, 3, 4, 6
Finishing: 1, 2, 3, 4, 4s, 6

Hampden Brass & Aluminum Co.
262 Liberty St.
Springfield, Mass.
Metals: A, B
Machining: 1
Finishing: 1

Harbot Die Casting Corp.*
52 E. Centre St.
Nutley, N. J.
Metals: A
Machining: 1
Finishing: 1

Hardy Manufacturing Corp.
1225 West Pearl St.
Union City, Ind.
Metals: B

Harrelson Mfg. Co.
Calhoun City, Miss.
Metals: B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3, 4, 5, 6
Assembly: Yes

Hartzell Mfg., Inc.* **
2516 Wabash Ave.
St. Paul 14, Minn.
Metals: A, B, E, F
Machining: 1, 2, 3, 4, 5, 6
Finishing: 1

Harvill Corp.* **
6521 W. Century Blvd.
Los Angeles 45, Calif.
Metals: A, B, C, D
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2s, 3s, 4, 5, 6, 7s
Assembly: Yes

H. L. Harvill Mfg. Co.
P. O. Box 777
Corona, Calif.
Metals: A, B, C, D
Machining: 1, 1s, 2, 2s, 3, 3s, 4, 4s, 5 5s, 6, 6s, 7, 7s
Finishing: 1, 1s, 2s, 4s, 5s, 6s, 7s
Assembly: Yes

for key see page 67

Haug Die Casting Corp.
356 W. First Ave.
Roselle, N. J.
Metals: B
Machining: 1, 2, 3, 4, 5s, 6, 7s
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s
Assembly: Yes

Hayden Mfg. Co.
618 Hartrey Ave.
Evanston, Ill.
Metals: A, B
Machining: 1, 2, 3, 4, 6, 7
Finishing: 1, 2, 3, 4, 5, 6
Assembly: Yes

Heick Die Casting Corp.* **
6550 W. Diversey Ave.
Chicago 35, Ill.
Metals: A, B
Machining: 1, 2, 3, 4, 5s, 6, 7
Finishing: 1, 2s, 3s, 4s, 5s, 6, 7s
Assembly: Yes

Helfrich Die Casting Co.
207 Schneider Rd.
North Canton, Ohio
Metals: B
Machining: 1, 2, 3, 5, 6

Helm Accessories, Inc.
9818 Grinnell St.
Detroit 13, Mich.
Metals: A, B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s
Assembly: Yes

Herlicon Metals & Plastics, Inc.
3815 Ruskin St.
Montreal, Que., Can.
Metals: A, B, E, F
Machining: 1, 2, 3, 4, 5s, 6, 7
Finishing: 1, 2s, 3s, 4s, 5s, 6
Assembly: Yes

BDC

THE ACCEPTED STANDARD IN THE MIDWEST

FOR QUALITY, SERVICE AND COST

for Experience. *Our expert engineers, designers and production men know how to save you money while turning out top quality die castings.*

Modern Facilities. *Modern tool room and die casting equipment are at your service when you buy from Badger.*

Service. *Speed, dependability and cooperation are keynotes in our customer relationships.*

Engineering Help. *The advice and assistance of our engineers can save you time and dollars in designing your castings.*

Reasonable Prices. *You'll find Badger die castings fairly priced.*

Badger Die Casting Corporation
201 W. OKLAHOMA AVE., MILWAUKEE 7, WISCONSIN

Circle No. 18 on Reader Service Card

Hermel Die Casting Corp.
Love Rd., P. O. Box 155
Eau Claire, Mich.
Metals: A, B
Machining: 1, 2, 4, 6, 7
Finishing: 1
Assembly: Yes

Hilfinger Corp.* **
1800 Westwood Ave.
Toledo 7, Ohio
Metals: B
Machining: 1, 2s, 3s, 4, 5, 6, 7
Finishing: 1, 2, 3, 4, 5, 6s, 7s
Assembly: Yes

Holland Die Casting Co.
582 Gordon St.
Holland, Mich.
Metals: B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 2s, 3, 4, 5, 6, 6s, 7s
Assembly: Yes

Holmco, Inc.
Holmes, Iowa
Metals: A
Machining: 1
Finishing: 1
Assembly: Yes

Hooper Die Casting Co.
300 Maple Ave.
Trenton 8, N. J.
Metals: B, E
Machining: 1, 2s, 3s, 4s, 5s, 6s, 7s
Finishing: 1s, 2s, 3s, 4s, 5s, 6s, 7s

Hoover Co., The* **
Die Cast Div.
North Canton, Ohio
Metals: A, B
Machining: 1, 2, 3, 4, 6
Finishing: 1, 2, 6
Assembly: Yes

Hoover Company, Ltd.* **
Commercial Die Cast Div.
Gage Avenue N.
Hamilton Ontario, Canada
Metals: A
Machining: 1, 2, 3, 4, 5s, 6, 7
Finishing: 1, 2, 4, 5, 6s, 7s
Assembly: Yes

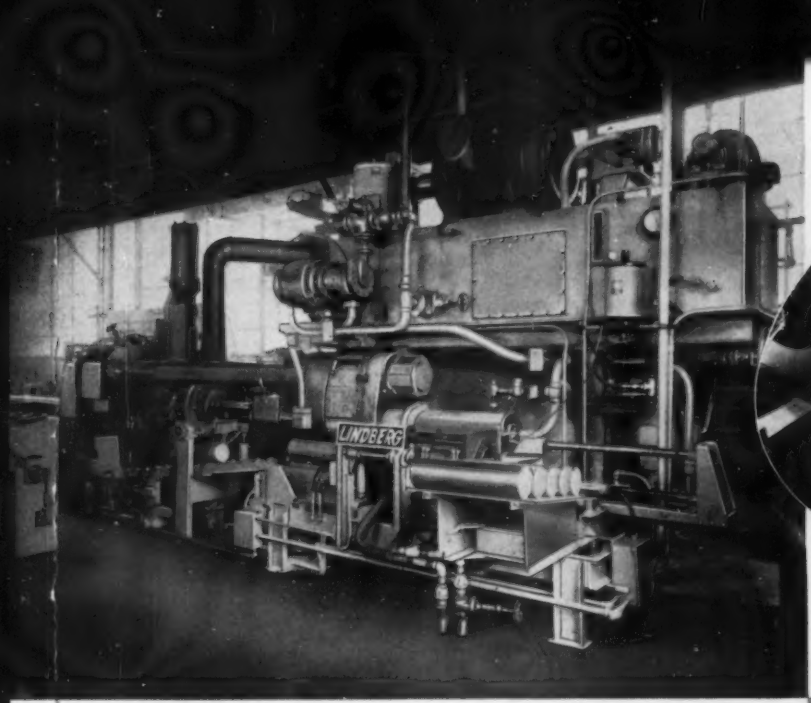
Hoover Ball & Bearing Co.
Glenvale Products Division
Malvern, Ark.
Metals: A, D
Machining: 1
Finishing: 2s, 3s, 4, 6
Assembly: Yes

Hoover Ball & Bearing Co.
Universal Die Cast Div.
Saline, Mich.
Metals: B
Machining: 1, 3, 4, 5, 7
Finishing: 1, 2, 3, 4, 5
Assembly: Yes

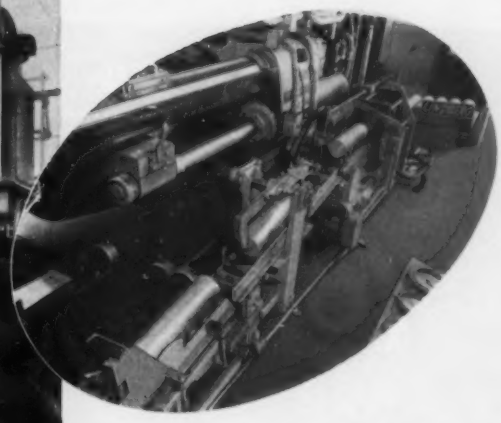
R. W. Hughes Industries, Inc.
2713 Ludelle St.
Fort Worth, Tex.
Metals: A
Machining: 1s, 2s, 3s, 4s, 5s, 6s
Finishing: 1, 6
Assembly: Yes

Hurd Lock & Mfg. Co.
9689 Grand River Ave.
Detroit 4, Mich.
Metals: B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3, 4, 5, 6, 7s
Assembly: Yes

for key see page 67



Lindberg 60 cycle billet heater installation on extrusion press at Hazelwood Engineering and Equipment Co., Hazelwood, Mo.



Operation of Lindberg billet heater is fully automatic. Billets are automatically delivered to the coil, heated, cooled to desired temperature and delivered to the extrusion press.

For improving extrusion techniques

Lindberg's new 60 Cycle Induction Billet Heater

This new Lindberg 60 Cycle Induction Billet Heater provides the means of improving the efficiency and economy of your extrusion techniques. Lindberg designers and engineers have pioneered many important developments in induction heating. This new billet heater is another example of leadership in this field.

Here are some of its advantageous features:

- Major components are separated for efficient utilization of space around extrusion press area.
- Special BTU metering unit for close control of billet temperature.
- Automatic initial billet temperature correction device.
- Fully automatic cycling of loading, heating and discharge operations.
- Device for control of physical and extrusion properties of the billet.
- Maintenance is simplified because of accessibility to all component parts. Coil can be changed in less than 60 minutes. No thermocouple maintenance.
- Unit design for simple adjustment to accommodate various diameters and lengths of billets.
- Specially designed closed water cooling system for transformers and induction coil for most economical use of cooling water regardless of the location area of installation.
- Rugged construction of all major components.

Bring your extrusion problems to Lindberg. Our engineering staff will provide a complete consultation service on the installation and start up of equipment and extrusion techniques to help you meet most effectively the standard specifications of the industry. Get in touch with your local Lindberg Field Representative (see your classified phone book) or write us direct.

High Frequency Division
LINDBERG ENGINEERING COMPANY
2463 West Hubbard Street, Chicago 12, Illinois
Los Angeles Plant: 11937 South Regentview Avenue, at Downey, California
In Canada: Birlefco-Lindberg, Ltd. Toronto

- **For ferrous or non-ferrous metals**
- **Available in all sizes and capacities**
- **Fully automatic operation**

LINDBERG heat for industry

Circle No. 60 on Reader Service Card

Hyatt Die Casting & Engineering Co.*
240 California St.
El Segundo, Calif.
Metals: A, B, C
Machining: 1, 1s, 2, 2s, 3, 3s, 4, 4s, 5s 6s, 7s
Finishing: 1, 2s, 3s, 4s, 5s, 6, 7s

Hydro Die Casting Corp.
Sharon Ave.
Plattsburg, N. Y.
Metals: B
Machining: 1, 2, 4, 6, 7
Assembly: Yes

Illinois Advance Die & Mold Co.
2005 N. Major Ave.
Chicago 39, Ill.
Metals: A, B
Machining: 1,2, 3
Finishing: 1, 6
Assembly: Yes

Illinois Lock Co.
800 S. Ada St.
Chicago 7, Ill.
Metals: B
Machining: 1, 2, 3, 4, 5, 7s
Finishing: 1, 3s, 4s, 6, 6s
Assembly: Yes

Imperial Die Casting Corp.
11421 Knightsbridge Ave.
Culver City, Calif.
Metals: A, B
Machining: 1, 2, 3, 4, 6, 7
Finishing: 1, 2, 3s, 4, 6, 7s
Assembly: Yes

Indiana Steel Products Co.
Valparaiso, Ind.
Metals: A
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3s, 4, 5s, 6, 7s
Assembly: Yes

Industrial Castings, Inc.
125 Willis St.
Bedford, Ohio
Metals: A, B, C
Machining: 1, 2, 3, 4
Finishing: 1
Assembly: Yes

Industrial Die Casting Co.*
2300 N. Lister Ave.
Chicago 14, Ill.
Metals: A
Machining: 1, 2, 3, 4, 5s, 6, 7s
Finishing: 1, 2, 3s, 4s, 5s, 6s, 7s
Assembly: Yes

International Hardware Mfg. Co.
21641 Meyers Rd.
Detroit 37, Mich.
Metals: B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3s, 4, 5s, 6s, 7s
Assembly: Yes

Irrigation Equipment Co., Inc.* **
Industrial Div.
1300 Bethel Dr.
Eugene, Oreg.
Metals: A, B, C, D
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3, 4, 5, 6, 7s
Assembly: Yes

J & F Tool & Die Casting Corp.
R. D. #2
P. O. Box 175
Athens, Pa.
Metals: B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s
Assembly: Yes

Jersey Plastic & Die Casting Co.* **
149-165 Shaw Ave.
Irvington 11, N. J.
Metals: A, B
Machining: 1, 2s, 3s, 4s, 5s, 6s, 7s
Finishing: 1, 2s, 3s, 4, 4s
Assembly: Yes

Jervis Corp.
Middleville, Mich.
Metals: A, B

Jet Die Casting Corp.* **
1317 Concord Place
Chicago 22, Ill.
Metals: A, B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1

Joyner Silver & Electro-Plating Co.
Osseo, Minn.
Metals: B
Machining: 1
Finishing: 1, 2, 3, 4
Assembly: Yes

Kadee Metal Products Co.
720 S. Grape St.
Medford, Oreg.
Metals: A, B
Machining: 1, 2, 3, 4
Finishing 5, 6

Kal-Die Casting Corp.
P. O. Box 2064
Kalamazoo, Mich.
Metals: A, B
Machining: 1
Finishing: 1, 2s, 3s, 4s, 6s

Kaljer Mfg. Co.
Middleville, Mich.
Metals: A
Machining: 1
Finishing: 1, 2s, 3s, 4s, 5, 5s, 6s
Assembly: Yes

Kamin Die Casting & Mfg. Co.*
3315 N. Knox Ave.
Chicago 41, Ill.
Metals: A, B
Machining: 1, 6
Finishing: 1

Keeler Brass Co.
955 Godfrey Ave., S. W.
Grand Rapids, Mich.
Metals: A, B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3, 4, 6, 7
Assembly: Yes

Ken-Moore Die Casting Co.
12299 Woodbine
Detroit 39, Mich.
Metals: B
Machining: 1, 2s, 3s, 4, 5s, 6s, 7
Finishing: 1, 2, 3s, 4s, 5s, 6, 7s
Assembly: Yes

Kennedy Die Castings, Inc.
200 Harding St.
Worcester 4, Mass.
Metals: A, B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s
Assembly: Yes

Mark Kenny Products Co.
251 E. 137th St.
New York, N. Y.
Metals: B
Machining: 1, 2, 3, 4, 6
Finishing: 1, 6
Assembly: Yes

Kent Casting Co.
200 Garden St., S. E.
Grand Rapids 7, Mich.
Metals: B
Machining: 1, 2, 3, 4, 5s, 6, 7
Finishing: 1, 2, 3s, 4, 4s, 5s, 6, 7s
Assembly: Yes

King Seeley Corp.
First St.
Ann Arbor, Mich.
Metals: B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3, 4, 6
Assembly: Yes

Kiowa Corp.* **
612 S. 12th St.
Marshalltown, Iowa
Metals: A, B
Machining: 1, 2, 3, 4
Finishing: 1, 2, 5, 6
Assembly: Yes

Kiser Plating & Mfg. Co., Inc.
401 E. Howard St.
Muncie, Ind.
Metals: B
Machining: 1, 2, 3, 4, 5s, 6,
Finishing: 1, 2, 3, 4, 6s
Assembly: Yes

Kitchen-Quip, Inc.
E. Marion St.
Waterloo, Ind.
Metals: A
Machining: 1, 2s, 3, 4s, 5s, 6s, 7
Finishing: 1, 2, 3, 4s, 5, 6, 7s
Assembly: Yes

Kohler Corp.
P. O. Box 104, Station B
Cincinnati 22, Ohio
Metals: A, B, C, D, E, F,
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3, 4, 5, 6, 7
Assembly: Yes

Kolsters Tool & Die Co.
8451 Baldwin St.
Oakland, Calif.
Metals: A, B, E, F
Machining: 1, 2, 3, 4, 5, 6, 7, 7s
Finishing: 1, 2s, 3s, 4s, 5s, 6
Assembly: Yes

Paul Krone Die Casting Co.* **
1811 N. Kostner Ave.
Chicago 39, Ill.
Metals: A, B
Machining: 1, 2, 3, 4, 5, 6s, 7s
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s

Kuhlman Die Casting Co.
7300 E. 17th St.
Kansas City 3, Mo.
Metals: A, B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3, 4, 5, 6
Assembly: Yes

Laco Die Casting Co.
23440 Lakeland Blvd.
Euclid 23, Ohio
Metals: B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3s, 4, 6
Assembly: Yes

La France Precision Casting Co.
29th & McKean St.
Philadelphia, Pa.
Metals: B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3, 4, 5, 6
Assembly: Yes

for key see page 67

Lake Erie Industries, Inc.
26420 Lakeland Blvd.
Euclid 32, Ohio
Metals: A, B
Machining: 1, 2, 3, 5
Finishing: 1, 2, 3, 4, 4s
Assembly: Yes

Lakeshore Die Casting Co., Ltd.
482 Queen Elizabeth Way E.
Oakville, Ont., Can.
Metals: A, B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 6
Assembly: Yes

Lansco Die Casting Co.* **
2029 N. Chico Ave.
El Monte, Calif.
Metals: A, B
Machining: 1, 2, 3, 4, 5s, 6, 7s
Finishing: 1, 2s, 3s, 4s, 5s, 6s 7s
Assembly: Yes

Latrobe Die Casting Co.*
North & Unity St.
P. O. Box 149
Latrobe, Pa.
Metals: A, B, E, F
Machining: 1, 2, 3, 4, 6, 7
Finishing: 1

Lee Silver Service, Inc.
13451 Helen St.
Detroit 12, Mich.
Metals: B
Machining: 1, 2s, 3, 4s, 5s, 6, 7
Finishing: 1, 2, 3, 4, 5s, 6s, 7s
Assembly: Yes

Lester Castings, Inc.*
25661 Cannon Rd.
Bedford Hts., Ohio
Metals: A
Machining: 1, 1s, 2s, 3, 3s, 4s, 5, 5s, 6s 7, 7s
Finishing: 1, 2s, 3s, 4s, 5s, 6, 7s

Ray Lewis & Son, Inc.
Delaware Rd.
Marysville, Ohio
Metals: B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3s, 4s, 5s, 6s, 7s
Assembly: Yes

Lincoln Die Casting, Inc.
15085 E. Eleven Mile
Roseville, Mich.
Metals: B
Machining: 1, 3, 4, 5, 7
Finishing: 1, 2, 3, 4, 6

Lincoln Industries, Inc.
4701 W. Grand Ave.
Chicago 39, Ill.
Metals: A, B
Machining: 1, 2, 3, 4, 5s, 6, 7s
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s
Assembly: Yes

Line Tool & Machine Co.
21225 Van Dyke
Baseline, Mich.
Metals: A, B
Machining: 1, 2, 3, 4, 6, 7
Finishing: 1
Assembly: Yes

Litometal Dicast, Inc.*
1927 Wildwood Ave.
Jackson, Mich.
Metals: A, B, C
Machining: 1, 2s, 3s, 4s, 5s, 6s, 7s
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s

for key see page 67

QUALITY is a FIXTURE at L.D.C.

. . . and these fine finish plumbing fixtures tell you why

Quality is fashioned by craftsmanship. Take these sparkling chrome plated zinc castings. Note their modern, graceful lines and soft, smooth finish . . . made possible only by the qualities of purity and surface soundness and uniformity of the alloy; and the rigid maintenance of close tolerances by controlled production methods and equipment.

And here is something else! The serrations for the mating spline in the handles of these fine fixtures are held to close dimensional tolerances by reason of the identical same qualities that govern the economical production of these castings.

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William Kranz
20001 West Lake Road
Tel: Edison 1-6888

DAYTON, OHIO
J. M. Gallaher
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Tel: Baldwin 4-3523

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J. R. Lemen, Jr.
1016 Fisher Bldg.
Tel: Trinity 3-5910

NEW ENGLAND
R. L. Thomson
79 Prospect St.
Stamford, Conn.
Tel: Fireside 8-3985

PHILADELPHIA, PA.
Albert B. Reid
505 Wadsworth St.
Tel: Chestnut Hill 7-8833

Latrobe Die Casting Co.
Latrobe, Pennsylvania

Established 1918

Circle No. 57 on Reader Service Card

Logan Industries
1640 W. Carroll Ave.
Chicago, Ill.
Metals: B
Machining: 1, 2, 3, 4, 5s, 6s, 7s
Finishing: 1, 2, 3, 4s, 5, 6s, 7s
Assembly: Yes

Long Island Die Casting, Inc.
21 Smith St.
Inwood L. I. 96, N. Y.
Metals: B
Machining: 1, 2, 3, 4, 6
Assembly: Yes

Los Angeles Die Cast Co.* **
340-346 Crocker St.
Los Angeles 13, Calif.
Metals: A, B, D
Machining: 1, 2, 3, 4, 5, 6s, 7s
Finishing: 1s, 2s, 3s, 4s, 5s, 6s, 7s

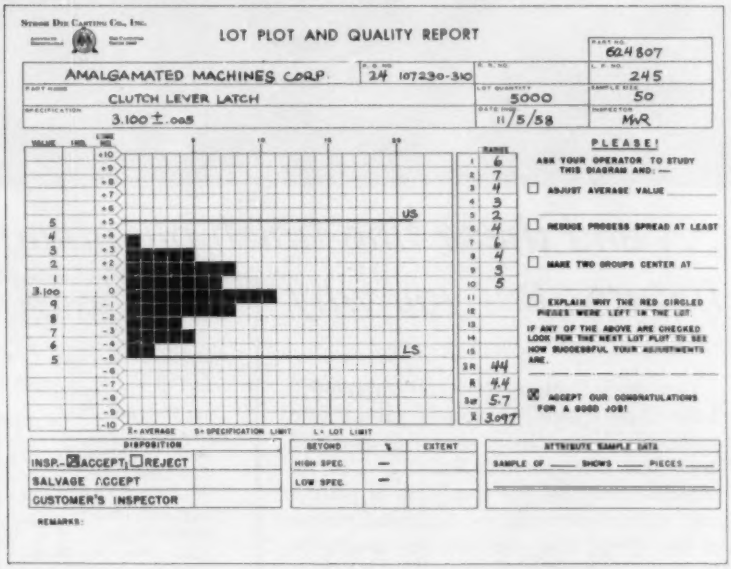
Lukens Aluminum Co.
746 Albany St.
Dayton 8, Ohio
Metals: A, C, E, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3, 4, 5s, 6, 7s
Assembly: Yes

Madison-Kipp Corp.* **
213 Waubesa St.
Madison 4, Wis.
Metals: A, B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 6
Assembly: Yes

Madwed Mfg. Co.
261 River St.
Bridgeport 4, Conn.
Metals: B
Machining: 1, 2, 3, 4
Finishing: 1, 2, 3, 4, 5, 6
Assembly: Yes

STROH introduces statistical quality control for die castings

DIMENSIONAL CONTROL AT STROH DIE CASTING BEGINS WITH A CHART LIKE THIS . . .



Here's what the new concept of Quality Control at STROH Die Casting means you . . .

CRITICAL DIMENSIONS

can be held within specified limits. Buyers who rely on statistical dimensioning to assure accurate parts for assembly are invited to consult Stroh.

LOWER INSPECTION COSTS

come from simpler receiving inspection instead of full sampling of each shipment of die castings. Many manufacturers now benefit from Stroh's Quality Control.

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IN OUR 56th YEAR

Stroh Die Casting Co., Inc.

11123 WEST BURLEIGH STREET
MILWAUKEE 10, WISCONSIN

Circle No. 87 on Reader Service Card

Magnesium Industries, Inc.
1313 Kalamazoo St.
South Haven, Mich.
Metals: A, B, C, D
Machining: 1, 2, 3, 6
Finishing: 1, 4, 5
Assembly: Yes

Manger Die Casting Co.
198 Seymour Ave.
Derby, Conn.
Metals: B
Machining: 1, 2, 3, 4, 5, 7s
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s
Assembly: Yes

Manor Die Cast Corp.*
P. O. Box 386
Bedford, Ohio
Metals: A
Machining: 1, 2, 3, 4, 4s, 5s, 6s, 7
Finishing: 1, 2, 3s, 4s, 5s, 6s, 7s
Assembly: Yes

Joseph P. Manz Die Cast Co.*
550 W. Beach Ave.
Inglewood, Calif.
Metals: A
Machining: 1
Finishing: 1, 6
Assembly: Yes

L. E. Mason Co.*
98 Business St.
Hyde Park, Mass.
Metals: A, B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 5
Assembly: Yes

Mendler Manufacturing Co.
Malden Rd., P. O. Box 125
Sandwich Postal Station
Windsor, Ont. Can.
Metals: B
Machining: 1, 2, 3, 4
Finishing: 1, 2

Meta-Mold Aluminum Co.*
Sub. of Dayton Malleable Iron Co.
525 E. Hamilton Rd.
Cedarburg, Wis.
Metals: A, C
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s

Metal-Cast Co.
616 16th Ave., W.
Birmingham 4, Ala.
Metals: A, B, E, F
Machining: 1, 2, 3, 4, 6, 7
Finishing: 6
Assembly: Yes

Metalmasters, Inc.*
5725 N. Ravenswood Ave.
Chicago 26, Ill.
Metals: A, B
Machining: 1, 2, 3, 4, 5s, 6
Finishing: 1, 2s, 3s, 4s, 5s, 6s
Assembly: Yes

Metro Casting Co., Inc.
40 Laurel Dr.
Scranton 5, Pa.
Metals: B
Machining: 1, 4, 6, 7
Finishing: 1, 6
Assembly: Yes

Micro Products Engineering Co.
234-40 Ridgewood Ave.
Newark 8, N. J.
Metals: B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3, 4s, 5, 6s, 7s
Assembly: Yes

for key see page 67

Mid-State Die Casting Co.
7878 S. Division Ave.
Grand Rapids 8, Mich.
Metals: B
Machining: 1, 2, 3
Finishing: 1, 2s, 3s, 4s, 6s
Assembly: Yes

Mid-Western Die Casting Co.
1501 North Halstead St.
Chicago 23, Ill.
Metals: A, B

Midwest Die Casting Co.* **
3930 N. First St.
Milwaukee 12, Wis.
Metals: B

Milwaukee Die Casting Co.* **
4132 N. Holton St.
Milwaukee 12, Wis.
Metals: A, B, E, F
Machining 1, 2, 3, 4, 5s, 6, 7
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s
Assembly: Yes

Missouri Diecasting Div.* **
Pierce Industries, Inc.
1411 No. 17th St.
St. Louis 6, Mo.
Metals: A, B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2s, 3s, 4s, 5s, 6, 7s

Model Die Casting, Inc.
P. O. Box 926
3811 W. Rosecrans
Hawthorne, Calif.
Metals: A, B
Machining: 1, 2, 3, 4, 5s, 6, 7
Finishing: 1, 2s, 3s, 4, 5s, 6s, 7s
Assembly: Yes

Modern Auto Accessories, Inc.
1328 W. Pico Blvd.
Los Angeles 15, Calif.
Metals: B
Machining: 1, 7
Finishing: 1, 2, 4, 6
Assembly: Yes

Modern Die Casting Corp.*
5419 N. Kedzie Ave.
Chicago 25, Ill.
Metals: A, B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1

Modern Pattern & Foundry Co., Inc.
5610 Alcoa Ave.
Los Angeles 58, Calif.
Metals: A, B, C, D, E, F

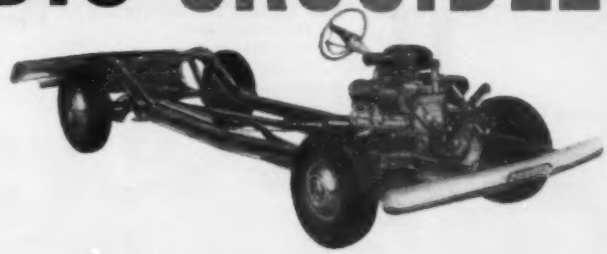
Mohawk Foundry, Inc.
55 First St.
Berea, Ohio
Metals: A
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 4, 5, 6
Assembly: Yes

Monarch Aluminum Mfg. Co.* **
9205 Detroit Ave.
Cleveland 2, Ohio
Metals: A, B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3s, 4s, 5s, 6, 7s
Assembly: Yes

Monarch Die Casting Corp.
1642 20th St.
Santa Monica, Calif.
Metals: A, B
Machining: 1, 2s, 3s, 4s, 5s, 6s, 7s
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s
Assembly: Yes

for key see page 67

SMALL CARS BIG CRUCIBLES



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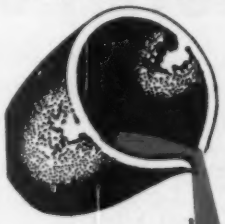

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- **LAVA CRUCIBLE-REFRACTORIES COMPANY**
- **ROSS-TACONY CRUCIBLE COMPANY**
- **VESUVIUS CRUCIBLE COMPANY**
- **AMERICAN REFRACTORIES & CRUCIBLE CORP.**
- **THE JOSEPH DIXON CRUCIBLE COMPANY**

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NAME.....

POSITION.....**COMPANY**.....

ADDRESS.....

CITY.....**STATE**.....

Circle No. 28 on Reader Service Card

Monarch Governor Co.
2800 Tyler Rd.
Willow Run, Mich.
Metals: A, B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3s, 4s, 5s, 6, 7s
Assembly: Yes

Monroe City Die Casting Co.
135 Front St.
Monroe City, Mo.
Metals: A, B
Machining: 1, 2, 3, 6
Finishing: 1

Morton Mfg. Co.
7025 Sarpy Ave.
Omaha, Nebr.
Metals: A, B, C
Machining: 1, 2, 3
Finishing: 1, 6

Mt. Vernon Die Casting Corp.* **
Southfield Ave.
Stamford, Conn.
Metals: A, B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s
Assembly: Yes

A. B. Mueller Co.
2101 E. John St.
St. Louis 7, Mo.
Metals: A, B
Machining: 1, 2, 3, 4, 5s, 6, 7
Finishing: 1, 2s, 3s, 4s, 5s, 6s
Assembly: Yes

Mutual Plating & Die Casting Co.
25611 W. Eight Mile Rd.
Detroit, Mich.
Metals: B
Machining: 1, 2s, 3, 4, 5s, 6s, 7s
Finishing: 1, 2, 3, 4s, 5s, 6s, 7s
Assembly: Yes

Name Products, Inc.
A Div. of Grover Smith Mfg. Corp.
852 E. Valley Blvd.
San Gabriel, Calif.
Metals: B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3s, 4, 5s, 6, 7s
Assembly: Yes

National Casting Corp.
6517 14th Ave.
Brooklyn, N. Y.
Metals. B, E, F
Machining: 1, 2s, 3, 4, 5, 6s, 7
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s
Assembly: Yes

National Hardware Specialties, Ltd.
Dresden, Ontario, Canada
Metals: B
Machining: 1, 2, 3, 4, 5, 7
Finishing: 1s, 2s, 3s, 4s, 5s, 6s
Assembly: Yes

National Lock Co.
1902 Seventh St.
Rockford, Ill.
Metals: A, B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3, 4, 5, 6
Assembly: Yes

National Metal Products Co.
10th & Eastern Ave.
Cornersville, Ind.
Metals: B
Machining: 1, 2, 3, 4, 6, 7
Finishing: 1, 2, 3, 4, 6
Assembly: Yes

Nelmor Mfg. Corp.
P. O. Box 4201
Cleveland 32, Ohio
Metals: A, B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3, 4, 6
Assembly: Yes

Nelson Metal Products* **
Div. Midland-Ross Corp.
510 32nd St., S. E.
Grand Rapids 8, Mich.
Metals: A, B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1 2, 3, 4, 6
Assembly: Yes

New England Die Casting Co.
445 Front Ave.
West Haven, Conn.
Metals: A, B
Machining: 1, 2, 3, 4, 5, 6
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s
Assembly: Yes

New Products Corp*
448 North Shore Dr.
Benton Harbor, Mich.
Metals: A, B, C, E

Newton New Haven Co.* **
680 Third Ave.
New Haven, Conn.
Metals: A, B
Machining: 1, 2, 3, 4, 5, 6
Assembly: Yes

Nichols Industries, Inc.
P. O. Box 1191
Jacksonville, Tex.
Metals: B
Machining: 1, 2, 3, 4, 6, 7
Finishing: 1, 2, 3, 4, 5, 6, 7
Assembly: Yes

Nichols Tool & Die
1831 N. Killingsworth
Portland 17, Oreg.
Metals: A, B
Machining: 1, 2, 3, 4, 6, 7
Finishing: 1, 2s, 3s, 4s, 5s, 6s
Assembly: Yes

Norgren-Stemac* **
Div. of C. A. Norgren Co.
5400 S. Delaware
Littleton, Colo.
Metals: B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3, 4, 5s, 6, 7s
Assembly: Yes

Norlipp Co.
5925 S. Lowe Ave.
Chicago 21, Ill.
Metals: B
Machining: 1, 4
Finishing: 1, 2, 3
Assembly: Yes

Northern Iowa Die Casting Inc.
P. O. Box 93
Spirit Lake, Iowa
Metals: B
Machining: 1, 2, 3, 4, 5s, 6, 7s
Finishing: 1, 2, 3s, 4, 5s, 6s, 7s
Assembly: Yes

Northern Star Plating Co.
505 Riversland Rd.
Loves Park, Ill.
Metals: B
Machining: 1
Finishing: 1, 2, 3, 4, 5, 6
Assembly: Yes

Norwood Tool & Machine Co.
1952 Thomas St.
Three Rivers, Mich.
Metals: B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2s, 3s, 4, 5s, 6, 6s, 7s
Assembly: Yes

Ohio Die Casting Corp.
266 E. Fifth Ave.
Columbus 1, Ohio
Metals: A, B
Machining: 1, 2, 3, 4s, 5, 6, 7
Finishing: 1, 2s, 3s, 4, 5, 6

Ontario Steel Products Co., Ltd.
105 St. George St., P. O. Box 2004
Chatham, Ont., Can.
Metals: B
Machining: 1, 3, 7
Finishing: 1, 2, 3, 4
Assembly: Yes

Oren Products Co.
19950 Ingersoll Dr.
Rocky River, Ohio
Metals: A, B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3s, 4s, 5s, 6, 7s
Assembly: Yes

Oswego Castings Corp., Sub. of*
Oberdorfer Foundries, Inc.
Box 222
Oswego, N. Y.
Metals: A
Machining: 1, 2, 3, 4, 5s, 6, 7s
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s
Assembly: Yes

Pabcast*
355 W. Alondra Blvd.
Gardena, Calif.
Metals: A, B, C, D
Machining: 1, 2, 3, 4, 5s, 6, 7
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s
Assembly: Yes

Page & Hall Die Casting Co., Inc.
1600 Hyde Park Ave.
Boston 36, Mass.
Metals: A, B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 4, 5, 6,
Assembly: Yes

Paragon Die Casting Co.* **
5851 W. Dickens Ave.
Chicago 39, Ill.
Metals: A, B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2
Assembly: Yes

Paramount Die Casting Co.
Freeman, Field
Seymour, Ind.
Metals: A, B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s
Assembly: Yes

Paramount Die Casting Co.* **
U. S. Highway #12
St. Joseph, Mich.
Metals: A, B, C
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3s, 4s, 5s, 6, 7s
Assembly: Yes

Parker White Metal Co.* **
2153 McKinley Ave.
Erie, Pa.
Metals: A, B, D, E, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2s, 3s, 4s, 5s, 6, 7s
Assembly: Yes

for key see page 67

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Peasley Products, Inc.* **
993 Honeyspot Rd.
Stratford, Conn.
Metals: A, B
Machining: 1, 2, 3s, 4s, 5s, 6s, 7s
Finishing: 1, 2s, 3s, 4s, 5s, 6, 7s
Assembly: Yes

Peat Mfg. Co.* **
Div. Textron, Inc.
10700 E. Firestone Blvd.
Norwalk, Calif.
Metals: A, B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2
Assembly: Yes

Peterson's Machine Shop
258 Russell St.
Lewiston, Maine
Metals: A, B
Machining: 1, 2, 3, 4, 6
Finishing: 1, 5, 6

Petoskey Mfg. Co.
200 W. Lake St.
Petoskey, Mich.
Metals: B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3, 4, 5s, 6s, 7s
Assembly: Yes

Ben Phillips Nameplates
132 W. Verdugo Ave.
Burbank, Calif.
Metals: B
Machining: 1s, 2s, 3s, 4s, 5s, 6s, 7s
Finishing: 1, 2s, 3s, 4, 5s, 6s, 7s

Phoenix Die Casting Co.* **
21-23 Illinois St.
Buffalo 3, N. Y.
Metals: A, B, E

Pioneer Diecasters, Inc.* **
4209 Chevy Chase Dr.
Los Angeles 39, Calif.
Metals: A, B
Machining: 1, 4
Finishing: 1
Assembly: Yes

Pittsburgh Die & Casting Co.* **
7503 Ardmore St.
Pittsburgh 18, Pa.
Metals: A, B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 4, 5, 6
Assembly: Yes

Pomona Die Casting Corp.
4253 State St.
Pomona, Calif.
Metals: A, B
Machining: 1, 2, 3, 4
Finishing: 1, 2, 3s, 4s, 5s, 6
Assembly: Yes

A. O. Pope Limited
90 Winter St.
St. John, N.B., Canada
Metals: A, B
Machining: 1, 2, 3, 4, 5s, 6, 7
Finishing: 1, 2s, 3s, 4s, 5, 6, 7s
Assembly: Yes

Power Brake Equipment Co.
1632 S. E. 11th Ave.
Portland 14, Oregon
Metals: A, B
Machining: 1, 2, 3, 4, 5s, 6, 7
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s
Assembly: Yes

Precise Castings, Inc.
2442 Madison Ave.
Anderson, Ind.
Metals: A, B, C
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2
Assembly: Yes

Premier Die Casting Co.*
28 Margaretta St.
Newark 5, N. J.
Metals: A, B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3s, 4s, 5s, 6, 7s
Assembly: Yes

Pressco Casting & Mfg. Corp.
Broadway & Waverly Rd.
Chesterton, Ind.
Metals: D
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 2s, 3s, 4s, 6
Assembly: Yes

Pressure Castings of Canada Ltd.
67 Main St.
Toronto, Ont., Can.
Metals: A, B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3, 4, 5, 6, 7
Assembly: Yes

Proctor Metal Products
629 Hill Ave. - P. O. Box 1011
New Braunfels, Texas
Metals: A, B
Machining: 1
Finishing: 1, 2, 6
Assembly: Yes

Product Engineering Co.
15227 S. E. Meadowbrook Lane
Milwaukee, Oreg.
Metals: A, B
Machining: 1, 2, 3, 4
Finishing: 1, 2, 4, 6, 7s
Assembly: Yes

Product Engineering & Mfg. Corp.
P. O. Box 35
Bridgman, Mich.
Metals: A, B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3, 4, 5, 6
Assembly: Yes

Production Aluminum Co.
338 Wealthy S. W.
Grand Rapids 3, Mich.
Metals: A
Machining: 2s, 3s, 4s, 5s, 6s, 7s
Finishing: 1s, 2s, 3s, 4s, 5s, 6s, 7s
Assembly: Yes

Production Die Casting Co.*
P. O. Box 9456
6502 Rusk Ave.
Houston 11, Tex.
Metals: A, B
Machining: 1, 2, 3, 4, 5s, 6, 7
Finishing: 1, 2, 3, 4, 5s, 6, 7s
Assembly: Yes

Production Mold & Machine Co.
2112 Leota St.
Huntington Park., Calif.
Metals: B
Machining: 1, 2, 3, 4, 5, 5s, 6, 7, 7s
Finishing: 1, 2s, 3s, 4s, 5s, 6
Assembly: Yes

Products Engineering & Mfg. Co.
569 Hulmeville Ave.
Penndel, Pa.
Metals: A, B
Machining: 1, 2, 3, 4
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s
Assembly: Yes

Puget Die Casting Co.
Day Island Waterway
Tacoma 66, Wash.
Metals: A, B, C, D
Machining: 1, 2, 3, 4
Finishing: 1, 6
Assembly: Yes

Quad-City Die Casting Co.* **
3800 River Dr.
Moline, Ill.
Metals: A, B
Machining: 1, 2, 3, 4, 6, 7
Finishing: 1, 2s, 4s, 5s

Quality Metal Finishing Co.
4th & Walnut Sts.
Byron, Ill.
Metals: B
Machining: 1, 2, 3, 4, 5s, 6, 7
Finishing: 1, 2, 3, 4, 5, 6
Assembly: Yes

Racine Die Casting Co.* **
1500 16th St.
Racine, Wis.
Metals: A, B
Machining: 1, 2, 3, 5
Finishing: 1, 2s, 3s, 6s

Rangers Die Casting Co.*
10828 S. Alameda, Box 147
Lynwood, Calif.
Metals: A, C
Machining: 1, 2, 3, 4
Finishing: 1, 2s, 3s, 4s, 5s, 6, 7s

Redi Industries Ltd.
2346 Clarke St., P. O. Box 105
Port Moody, B.C., Canada
Metals: B, E
Machining: 1
Finishing: 1, 2, 4
Assembly: Yes

Reese Padlock Co.
128 Sherman St.
Lancaster, Pa.
Metals: B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3, 4, 5, 6
Assembly: Yes

A. C. Rehberger Co.
2134 N. Magnolia Ave.
Chicago 14, Ill.
Metals: B, E, F
Machining: 1, 6, 7
Finishing: 3
Assembly: Yes

Republic Die Casting* **
Div. of Landers, Frary & Clark
Chaffee Access Rd.
Ft. Smith, Ark.
Metals: A, B

Rhode Island Die Casting Co.
669 Elmwood Ave.
Providence 7, R. I.
Metals: A, B, E
Machining: 1, 2s, 3s, 4s, 5s, 6s, 7s
Finishing: 1, 2, 3, 4, 5, 6, 7
Assembly: Yes

Richmond Machine Tool & Die Casting Co., Limited
5680 Fullum St.
Montreal 36, Que., Canada
Metals: A, B
Machining: 1, 2
Finishing: 1, 2, 3, 4, 5, 6

for key see page 67

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HOT WORK STEEL

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VDC is easy to machine . . . responds uniformly to heat treatment! These factors lead to die production at new low economies.

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Roberts Engineering & Mfg. Co., Inc.
Box 4060, 640 Navigation
Corpus Christi, Texas
Metals: A, B, E, F
Machining: 1, 2, 3, 4, 6, 7
Finishing: 1, 6
Assembly: Yes

Rocklin Mfg. Co.
110 S. Jennings St.
Sioux City, Iowa
Metals: A, B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3s, 4, 5s, 6, 7s
Assembly: Yes

Rowe Plastics & Die Casting Co.
2640 N. Southport Ave.
Chicago 14, Ill.
Metals: A, B
Machining: 1, 2, 3
Finishing: 1, 2
Assembly: Yes

Rubor Tool & Die Co.
1819 Utica Ave.
Brooklyn 34, N. Y.
Metals: B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 6
Assembly: Yes

Rupert Diecasting Div.,* **
Pierce Industries, Inc.
1655 Cleveland Ave.
Kansas City 27, Mo.
Metals: A, B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3, 4, 5, 6, 7, 7s
Assembly: Yes

Rutherford Bros. Plating Co.
P. O. Box 490
7 Emerick St.
Ypsilanti, Mich.
Metals: B
Machining: 1, 7
Finishing: 1, 2, 3, 4, 5, 6

S.K.S. Die Casting Co.
739 Allston Way
Berkeley 2, Calif.
Metals: A, B
Machining: 1, 2, 3, 4, 5s, 6, 7
Finishing: 1, 2, 2s, 3, 3s, 4s, 5, 6, 7s
Assembly: Yes

S. U. S. Die Casting Co., Inc.
41 E. Market
Logansport, Ind.
Metals: A, B

Saginaw Bay Industries, Inc.
242 N. Water St.
Bay City, Mich.
Metals: A, C
Machining: 1, 2s, 3s, 4s, 5, 6s, 7s
Finishing: 1, 2, 3s, 4s, 5, 6, 6s, 7s
Assembly: Yes

St. Louis Diecasting Corp.* **
4528 Oleatha Ave.
St. Louis 16, Mo.
Metals: A, B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s
Assembly: Yes

San Jose Die Casting Corp.
815 Chestnut St.
San Jose 10, Calif.
Metals: A, B, D
Machining: 1, 2s, 3s, 4s, 5s, 7, 7s
Finishing: 1, 2s, 3s, 4s, 6
Assembly: Yes

Sargeant & Greenleaf, Inc.
24 Seneca Ave.
Rochester 21, N. Y.
Metals: A, B, D
Machining: 1, 2, 3, 4, 5s, 6, 7
Finishing: 1, 2, 3, 4, 5s, 6s, 7s
Assembly: Yes

Scherer Die Casting Co.
Alyce Ave.
Cedarburg, Wis.
Metals: A
Machining: 1, 2, 3, 4, 6
Finishing: 1, 6s

Schultz Die Casting Co.* **
1810-16 Clinton St.
Toledo 7, Ohio
Metals: A, B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2s, 3s, 4s
Assembly: Yes

Schultz Die Casting Co. of* **
Canada, Ltd.
Wallace Street
Wallaceburg, Ont., Canada
Metals: A, B

Seaboard Die Casting Co.* **
1125 Prospect Ave.
West Islip, L. I., N. Y.
Metals: A, B
Machining: 1, 2s, 3s, 4s, 5s, 6s, 7s
Finishing: 1, 2, 3s, 4, 5s, 6, 6s, 7s
Assembly: Yes

Sheldon Die Casting Co.
Sub. of Le Sueur Foundry Inc.
Le Sueur, Minn.
Metals: A, B
Machining: 1, 1s, 2, 2s, 3, 3s, 4, 4s, 6, 6s, 7, 7s
Finishing: 1, 1s
Assembly: Yes

Sherman Pressure Casting Co.* **
601 W. 26th St.
New York 1, N. Y.
Metals: A, B, C
Machining: 1, 1s, 2, 2s, 3, 3s, 4, 4s, 5s, 6, 6s, 7, 7s
Finishing: 1, 1s
Assembly: Yes

Skulsky Mfg. Co.
250 Moore St.
Brooklyn 6, N. Y.
Metals: B
Machining: 1, 2, 3, 4, 5s, 6, 7
Finishing: 1, 2, 3, 4, 4s, 5s, 6s, 7s
Assembly: Yes

Soper Mfg. Co.
1099 Milton St.
Benton Harbor, Mich.
Metals: B
Machining: 1, 2, 3, 4

Southern Industrial Die Casting Co.
Box 21
Moultrie, Ga.
Metals: A, B
Machining: 1, 2s, 3s, 4s, 5s, 6s, 7s
Finishing: 1, 6

J. W. Speaker Corp.
3059 N. Weil St.
Milwaukee 12, Wis.
Metals: B
Machining: 1, 6s, 7
Finishing: 1, 2s, 3s, 4, 6

Speedmaster Engineering Co.
900 Doolittle Dr.
San Leandro, Calif.
Metals: A, B, D
Machining: 1, 2, 3, 4, 5, 6, 7s
Finishing: 1, 2, 2s, 3s, 4s, 5s, 6, 6s
Assembly: Yes

Springfield Die Casting Co., Inc.* **
720 Lexington Ave.
Kenilworth, New Jersey
Metals: B

Standard Record Mfg. Co.
70 N. San Gabriel Blvd.
Pasadena, Calif.
Metals: A, B, E
Machining: 1, 2, 3, 6
Finishing: 1, 2, 3s, 4
Assembly: Yes

Staver Co., Inc.
41 N. Saxon St.
Bay Shore, L. I., N. Y.
Metals: E, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2s, 3s, 4s, 5s, 6, 7s
Assembly: Yes

Stella Products Corp.* **
66 Okner Pkwy.
Livingston, N. J.
Metals: B
Machining: 1, 2, 3, 4, 5s, 6, 7
Finishing: 1, 2s, 3s, 4s, 5s, 6, 7s
Assembly: Yes

Sterling Aluminum Products, Inc.
2600 N. Third
St. Charles, Mo.
Metals: A
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2

Sterling Die Casting Co., Inc.* **
743 39th St.
Brooklyn 32, N. Y.
Metals: A, B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2s, 3s, 4s, 5s, 6s

Stewart Warner Corp.
Bassick Sack Div.
P. O. Box 4237
Winston-Salem, N. C.
Metals: B
Machining: 1, 2s, 3s, 4, 5, 6, 7
Finishing: 1, 2, 3, 4, 5s, 6, 7s
Assembly: Yes

Stewart-Warner Corp.* **
Stewart Die Casting Div.
4535 Fullerton Ave.
Chicago 39, Ill.
Metals: A, B, C
Machining: 1, 2, 3, 4, 5, 6 7
Finishing: 1, 2s, 3s, 4s, 5, 6, 7s
Assembly: Yes

Strite-Anderson Mfg. Co.
1920 Washington Ave., S.
Minneapolis, Minn.
Metals: A, B, E, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2s, 3s, 4, 5s, 6s, 7s
Assembly: Yes

Stroh Die Casting Co., Inc.* **
11123 W. Burleigh St.
Milwaukee 10, Wis.
Metals: A, B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2s, 3s, 4s, 5s, 6, 7s
Assembly: Yes

for key see page 67

Super Grip Anchor Bolt Co.
3333 N. 22nd St.
Philadelphia 40, Pa.
Metals: B, E
Machining: 1, 2, 4, 5, 6, 7
Finishing: 1, 4
Assembly: Yes

Superior Die Casting Co.* **
1001 London Rd.
Cleveland 10, Ohio
Metals: A, B, D
Machining: 1, 2, 3, 3s, 4s, 5s, 6s, 7s
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s

Syracuse Die Casting & Mfg. Co.
2101 Teall Ave.
East Syracuse, N. Y.
Metals: A, B, E, F
Machining: 1, 2, 3, 4s, 5s, 6s, 7s
Finishing: 1, 2s, 3s, 4s, 5, 6s, 7s
Assembly: Yes

Talon, Inc.
Plant 7
626 Arch St.,
Meadville, Pa.
Metals: B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3, 3s, 4, 6

Tann Corp.* **
Congress Die Casting Div.
3750 E. Outer Dr.
Detroit 34, Mich.
Metals: B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3, 4, 5, 6s, 7s
Assembly: Yes

J. Y. Taylor Mfg. Co.
Box 529
Garland, Texas
Metals: A, B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3, 6
Assembly: Yes

Techni-Cast Corp.* **
600 Walnut St.
Hamilton, Ohio
Metals: A, B
Machining: 1, 2s, 3, 4s, 5s, 6s, 7s
Finishing: 1, 2s, 3s, 4s, 6s
Assembly: Yes

Terry Burners, Inc.
5105 Buchan St.
Montreal, Que., Can.
Metals: A, B
Machining: 1, 2, 3
Finishing: 1, 2, 4, 6

Thompson Die Casting, Inc.
120 W. Elm Court
Burbank, Calif.
Metals: B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2s, 3s, 4s, 5s, 6, 7s
Assembly: Yes

Thompson-Ramo Wooldridge, Inc.
Light Metals Div.
2269 Ashland Rd.
Cleveland 3, Ohio
Metals: A, C
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3, 4, 5, 7
Assembly: Yes

Titan Metal Mfg. Co.*
Div. Cerro DePasco Corp.
Bellefonte, Pa.
Metals: A, D

Toroy Co.
765 Elmont Rd.
Elmont, N. Y.
Metals: A, B, E
Machining: 1, 2, 3, 4, 5s, 6s, 7s
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s
Assembly: Yes

E. Toman & Co.
8700 W. 47th St.
Lyons, Ill.
Metals: A, B
Machining: 1, 2, 3, 4, 5s, 6, 7
Finishing: 1, 2, 3s, 4s, 5s, 6s, 7s
Assembly: Yes:

Trilex Corp.
44052 Yost Rd.
Wayne, Mich.
Metals: B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3, 4, 6
Assembly: Yes

Turner Mfg. Co.
404 W. Superior St.
Kokomo, Ind.
Metals: E
Machining: 1, 2, 4, 7
Finishing: 1

Twin City Die Castings Co.* **
3324 Lee Ave., N.
Minneapolis 22, Minn.
Metals: A, B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2s, 3s, 4s, 5s, 6, 7s

U. S. Expansion Bolt Co.
York, Pa.
Metals: B, E
Machining: 1, 2s, 3s, 4s, 5s, 6s, 7s
Finishing: 2s, 3s, 4, 6s
Assembly: Yes

Unimatic Mfg. Co.
Sherwood Lane
Caldwell, N. J.
Metals: A
Machining: 1, 2, 3, 4, 5s, 6s, 7s
Finishing: 1, 2s, 3s, 4s, 5s, 6, 7s
Assembly: Yes

Union Die Casting Co.* **
676 Putnam Dr.
Whittier, Calif.
Metals: A, B
Machining: 1, 2, 3, 4, 5, 6s, 7
Finishing: 1, 2s, 3s, 4, 6, 7s
Assembly: Yes

Universal Die Casting Co.* **
5001 Santa Fe Ave.
Los Angeles 58, Calif.
Metals: A, B, D
Machining: 1, 2s, 3s, 4, 5, 6s, 7s
Finishing: 1, 1s, 2s, 3s, 4s, 5s, 6s, 7s
Assembly: Yes

Univex Die Cast & Engineering
7001 Chase Rd.
Dearborn, Mich.
Metals: B, E
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3, 4, 5, 6, 7s
Assembly: Yes

Valley Die Cast Corp.
1791 Bellevue
Detroit 7, Mich.
Metals: B
Machining: 1, 4
Finishing: 1, 2, 3
Assembly: Yes

Van Wey Die Casting & Tooling
545 Standish St.
Redwood City, Calif.
Metals: A, B
Machining: 1
Finishing: 1, 6

Wahlstrom Model Works
704 7th St.
Rockford, Ill.
Metals: B
Machining: 1, 2
Finishing: 1, 2, 3s, 6s
Assembly: Yes

Walker Metal Products
P. O. Box 315
Lewisburg, Tennessee
Metals: B
Machining: 1, 2s, 3s, 4s, 5s, 6s, 7s
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s

Watchung Die Casting Corp.* **
P. O. Box 828
Plainfield, N. J.
Metals: A, B
Machining: 1, 2, 3, 4, 5s, 6s, 7s
Finishing: 1s, 2s, 3s, 4s, 5s, 6, 7s
Assembly: Yes

Waterbury Lock & Specialty
203 Broad St.
Milford, Conn.
Metals: B
Machining: 1, 4
Finishing: 1, 2, 3, 4, 6
Assembly: Yes

Wayland Co.
2632 W. Grand Ave.
Chicago 12, Ill.
Metals: A, B
Machining: 1, 2, 3, 4, 6, 7
Finishing: 1, 6
Assembly: Yes

Weatherhead Co.
Fort Wayne Div.
Antwerp Plant
Antwerp, Ohio
Metals: B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3, 4, 5, 6, 7s
Assembly: Yes

Webster Air Equipment Co., Ltd.
1161 King St.
London, Ontario, Canada
Metals: B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1s, 2s, 3s, 4, 5s, 6s, 7s
Assembly: Yes

Wells Die Casting Co. of Calif.* **
1960 Carroll Ave.
San Francisco 24, Calif.
Metals: A, B, D
Machining: 1, 2, 3, 4, 5s, 6s, 7s
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s
Assembly: Yes

Wells Mfg. Co.
Main & South Sts.
New Vienna, Ohio
Metals: B
Finishing: 4
Assembly: Yes

Wessel Hardware Corp.
919-931 N. Fifth St.
Philadelphia, Pa.
Metals: B
Machining: 1, 2, 3, 4, 5s, 6s, 7
Finishing: 1, 2, 3s, 4s, 5s, 6, 7s
Assembly: Yes

for key see page 67

West Irving Die Casting Co.*
240 S. Evergreen
Bensenville, Ill.
Metals: A
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 1s, 2s, 3s, 4s, 5s, 6s, 7s

Western Die Casting Co.* **
4065 Hollis St.
Emeryville 8, Calif.
Metals: A, B, C, D
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 5, 6
Assembly: Yes

Westinghouse Electric Corp.
1216 W. 58th St.
Cleveland, Ohio
Metals: A
Machining: 1, 2, 3, 4
Finishing: 1, 2, 3, 4, 5, 6
Assembly: Yes

Westland Die Casting Inc.* **
714 Ruperta St.
Glendale, Calif.
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s
Assembly: Yes

Wheaton Die Casting Corp.* **
North 10th St.
Millville, N. J.
Metals: A, B
Machining: 1, 2, 3, 4, 5s, 6s, 7s
Finishing: 1, 2s, 3s, 4, 6 6s
Assembly: Yes

White Die Casting Co.
MacNab St., at Head
P. O. Box 153
Dundas, Ontario, Canada
Metals: A, B
Machining: 1, 2, 3, 4, 5s, 6, 6s, 7s
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s
Assembly: Yes

White Industries, Inc.
1325 E. 171 St.
Cleveland 10, Ohio
Metals: A, B
Machining: 1, 2, 3, 4s, 5, 6s, 7s
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s
Assembly: Yes

Whitehead Die Casting Co.
1198 Zonolite Rd., N.E.
Atlanta 6, Ga.
Metals: A, B
Machining: 1, 2, 3, 4,
Finishing: 1, 6
Assembly: Yes

Wise Die Casting Corp.
98 Olean St.
Rochester 8, N. Y.
Metals: B
Machining: 1, 2
Finishing: 1, 2s, 3s, 6

Withrow Die Casting Co.* **
13164 Leadwell St.
North Hollywood, Calif.
Metals: A, B, D
Machining: 1, 2, 3, 4, 5s, 6, 7
Finishing: 1, 1s, 2s, 3s, 4s, 5s, 6s, 7s
Assembly: Yes

Wolverine Aluminum Diecasters, Inc.
13501 Mt. Elliott Ave.
Detroit 12, Mich.
Metals: A, B

Wolverine Die Cast Corp.
13700 Mt. Elliott
Detroit 12, Mich.
Metals: A, B
Machining: 1
Finishing: 1, 2, 3
Assembly: Yes

World Metal Spinning Corp.
Commercial St.
Hicksville, L. I., N. Y.
Metals: B
Machining: 1
Finishing: 3s, 6
Assembly: Yes

Yoder Die Casting, Inc.* **
727 Kiser St.
Dayton 4, Ohio
Metals: A, B
Machining: 1, 2, 3, 4s, 5s, 6s, 7s
Finishing: 1, 2, 3, 4

Yoder Industries
1040 E. First St.
Dayton 2, Ohio
Metals: A, B, E, F
Machining: 1, 2, 3, 4, 6
Finishing: 1,6

for key see page 67

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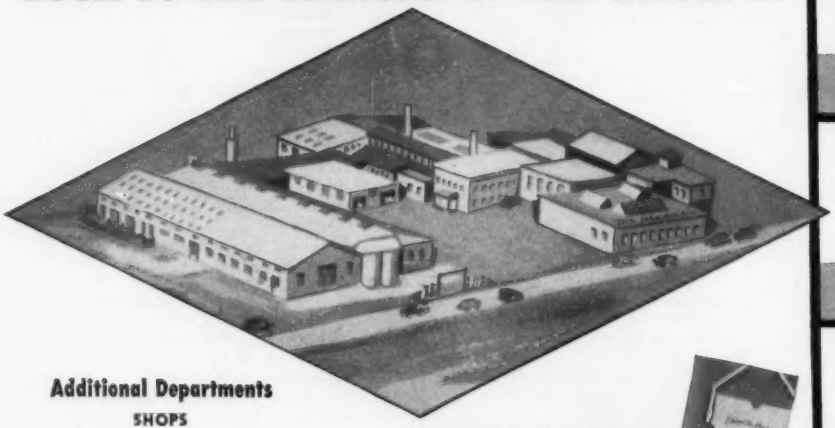

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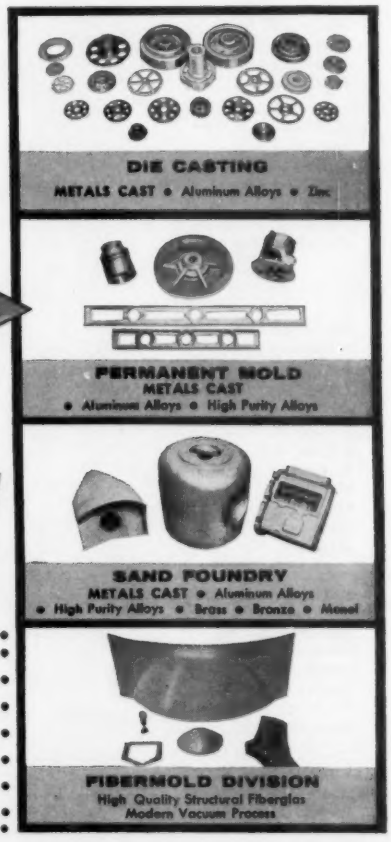
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Hamlin Products, Inc., P.O. 2016, Little Rock

Hoover Ball & Bearing Co., Glenvale Products Division, Malvern

Landers, Frary & Clark, Republic Die Casting Div., Chaffee Access Rd., Ft. Smith

CALIFORNIA

A & A Die Casting Corp., 12901 S. Western Ave., Gardena

Acme Tool & Die Casting Co., 4250 E. Washington Blvd., Los Angeles 23

Adco Diecasting Co., Inc., 9555 Rush St., El Monte

Alloy Die Casting Co., 2211 Firestone Blvd., Los Angeles 2

Aluminum Die Casting Co., 3452 San Fernando Rd., Los Angeles 65

Ambrit Industries, 1288 Los Angeles St., Glendale 4

Anderson Die Casting Co., 1000 E. 60th St., Los Angeles 1

Atherton Tool, Die & Mold Co., 1614 S. Sycamore St., Santa Ana

Austin Die Casting Co., 16837 S. Broadway, Gardena

Benda Tool & Model Works, 1444 4th St., Berkeley 10, Calif.

Bucy Die Casting, 625 So. Glenwood Pl., Burbank

C. & W. Metal Finishing, Inc., 3525 S. Greenwood Ave., Los Angeles 22

Casper's Machine Shop, 1047 77th Ave., Oakland 21

Coast Die Casting Co., 5752 Joanne Pl., Culver City

Cordray Die Casting Co., 6565 S. Wilson St., Los Angeles 1

Crown City Die Casting Co., 84 N. Fulton Ave., Pasadena 8

Deroy Mfg. Co., 9208 Atlantic Ave., South Gate

Die Cast Mfg. Co., 10138½ E. Rush St., El Monte

Die Cast Products, Inc., 621 W. Rosecrans Ave., Gardena

Dietz Die Casting, 2031 North Seaman Ave., South El Monte

Durall Mfg. Co., Box 866, Chula Vista

El Cajon Die Casting & Mfg. Co., 590 Marshall St., El Cajon

El Monte Tool & Die Cast, Inc., 2425 N. Tyler Ave., El Monte

Gyle Engineering Co., 6519 Wilson Ave., Los Angeles 1

H & S Metal Products Co., 4159 Whiteside St., Los Angeles 63

Harvill Corp., 6521 W. Century Blvd., Los Angeles 45

H. L. Harvill Mfg. Co., P.O. Box 777, Corona

Hyatt Die Casting & Engineering Co., 240 California St., El Segundo

Imperial Die Casting Corp., 11421 Knightsbridge Ave., Culver City

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Lansco Die Casting Co., 2029 N. Chico Ave., El Monte

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Joseph P. Manz Die Cast Co., 550 W. Beach Ave., Inglewood

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Modern Pattern & Foundry Co., Inc., 5610 Alcoa Ave., Los Angeles 58

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Name Products, Inc., A Div. of Grover Smith Mfg. Corp., 852 E. Valley Blvd. San Gabriel

Pabcast, 355 W. Alondra Blvd., Gardena

Peat Mfg. Co., Div. Textron, Inc., 10700 E. Firestone Blvd., Norwalk

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S.K.S. Die Casting Co., 739 Allston Way, Berkeley 2

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Union Die Casting Co., 676 Putnam Dr., Whittier

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Wells Die Casting Co. of Calif., 1960 Carroll Ave., San Francisco 24

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Westland Die Casting, Inc., 714 Ruperta St., Glendale

Withrow Die Casting Co., 13164 Leadwell St., North Hollywood

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Engineers Tool & Mfg. Co., 7 Islandbrook Ave., Bridgeport 6

Madwed Mfg. Co., 261 River St., Bridgeport 4

Manger Die Casting Co., 198 Seymour Ave., Derby

Mt. Vernon Die Casting Corp., Southfield Ave., Stamford

New England Die Casting Co., 445 Front Ave., West Haven, Conn.

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Florida Fishing Tackle Mfg. Co., Inc. 2100 First Ave. S., St. Petersburg

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Southern Industrial Die Casting Co., Box 21, Moultrie

Whitehead Die Casting Co., 1198 Zonolite Rd., N. E., Atlanta 6

ILLINOIS

Aallied Die Casting & Mfg. Co., Inc., 10029 Pacific Ave., Franklin Park

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Albany Chicago Co., 3253 S. Normal, Chicago 16

Aluminum Company of America, Mannheim Rd. & Madison St., Bellwood

American Cabinet Hardware Corp., 4000 Auburn St., Rockford

American Flange & Mfg. Co., Inc., 825 S. Kilpatrick Ave., Chicago 44

Anderson Tool & Mfg. Co., 3450 N. Kostner Ave., Chicago 41

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Chicago Die Casting Mfg. Co., 2514 W. Monroe St., Chicago 12

Chicago Expansion Bolt Co., 1338 W. Concord Pl., Chicago 22

Chicago White Metal Casting Co., 5239 W. Grand Ave., Chicago 39

Delta Die Casting Corp., 9393 W. Seymour Ave., Schiller Park

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Dormeyer Corp., Precision Parts Div., 4912 West Grand Ave., Chicago 39

Dowst Mfg. Co., 600 N. Pulaski Rd., Chicago 24

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Ehrhart Die Casting Co., K. O. K. X. Rd., Hamilton

Eklind Tool & Mfg. Co., 2627 N. Western Ave., Chicago 47

Electric Auto-Lite Co., The Woodstock Div., 501 Clay St., Woodstock

Federal Die Casting Co., 2222-32 Elston Ave., Chicago

Forster-Appelt Mfg. Co., Inc., 82 E. Lanark Ave., Lanark

Hadlock & Temte, Inc., 3336 W. Franklin Blvd., Chicago 24

Hayden Mfg. Co., 618 Hartrey Ave., Evanston

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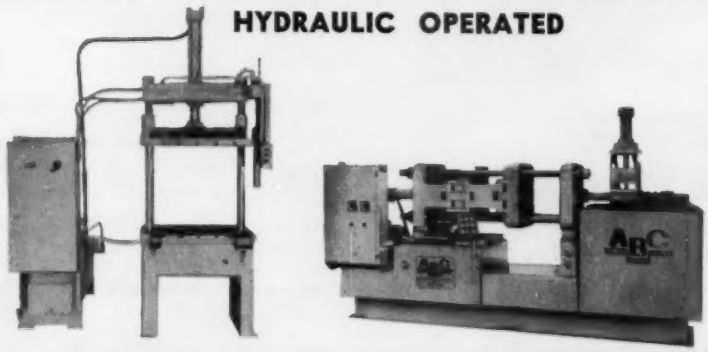

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E. Toman & Co., 8700 W. 47th St., Lyons

Wahlstrom Model Works, 704 7th St., Rockford

Wayland Co., 2632 W. Grand Ave., Chicago 12

West Irving Die Casting Co., 240 S. Evergreen, Bensenville

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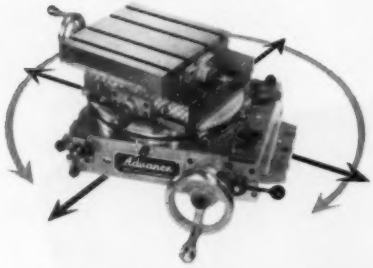

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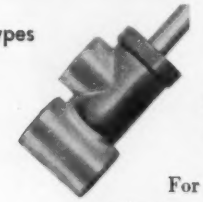

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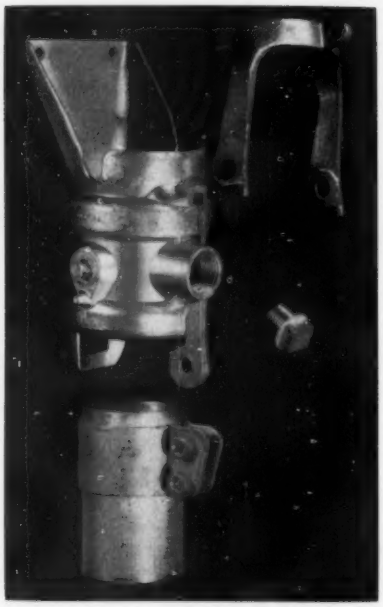

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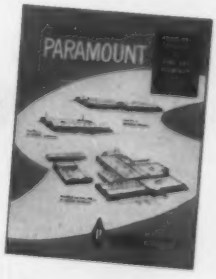

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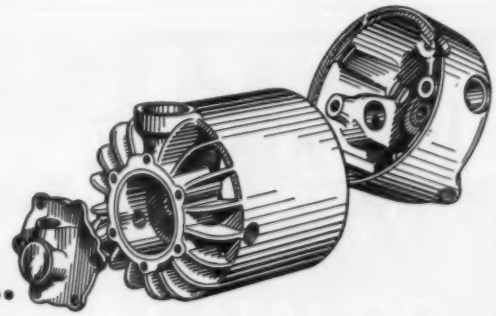

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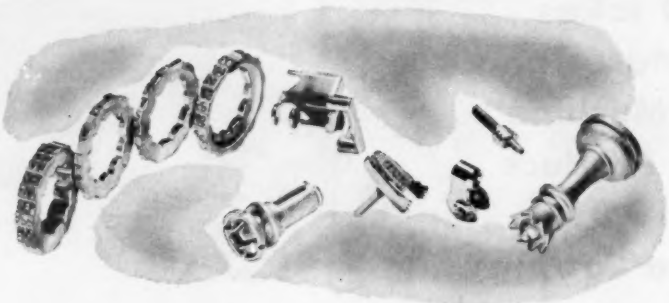

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Parker White Metal Co., 2153 McKinley Ave., Erie

Pittsburgh Die & Casting Co., 7503 Ardmore St., Pittsburgh 18

Products Engineering & Mfg. Co., 569 Huimeville Ave., Penndel

Reese Padlock Co., 128 Sherman St., Lancaster

Super Grip Anchor Bolt Co., 3333 N. 22nd St., Philadelphia 40

Talon, Inc., Plant 7, 626 Arch St., Meadville

Titan Metal Mfg. Co., Div. Cerro DePasco Corp., Bellefonte

U. S. Expansion Bolt Co., York

Wessel Hardware Corp., 919-931 N. Fifth St., Philadelphia

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Rhode Island Die Casting Co., 669 Elmwood Ave., Providence 7

TENNESSEE

Walker Metal Products, P.O. Box 315, Lewisburg

TEXAS

Dallas Die Casting Co., 334 Rock Island, Dallas 7

Fort Worth Die Cast Co., Inc., 1213 E. Doggert, Ft. Worth

Hall Level Mfg. Works, 1119 E. 4th St., Austin

R. W. Hughes Industries, Inc., 2713 Ludelle St., Fort Worth

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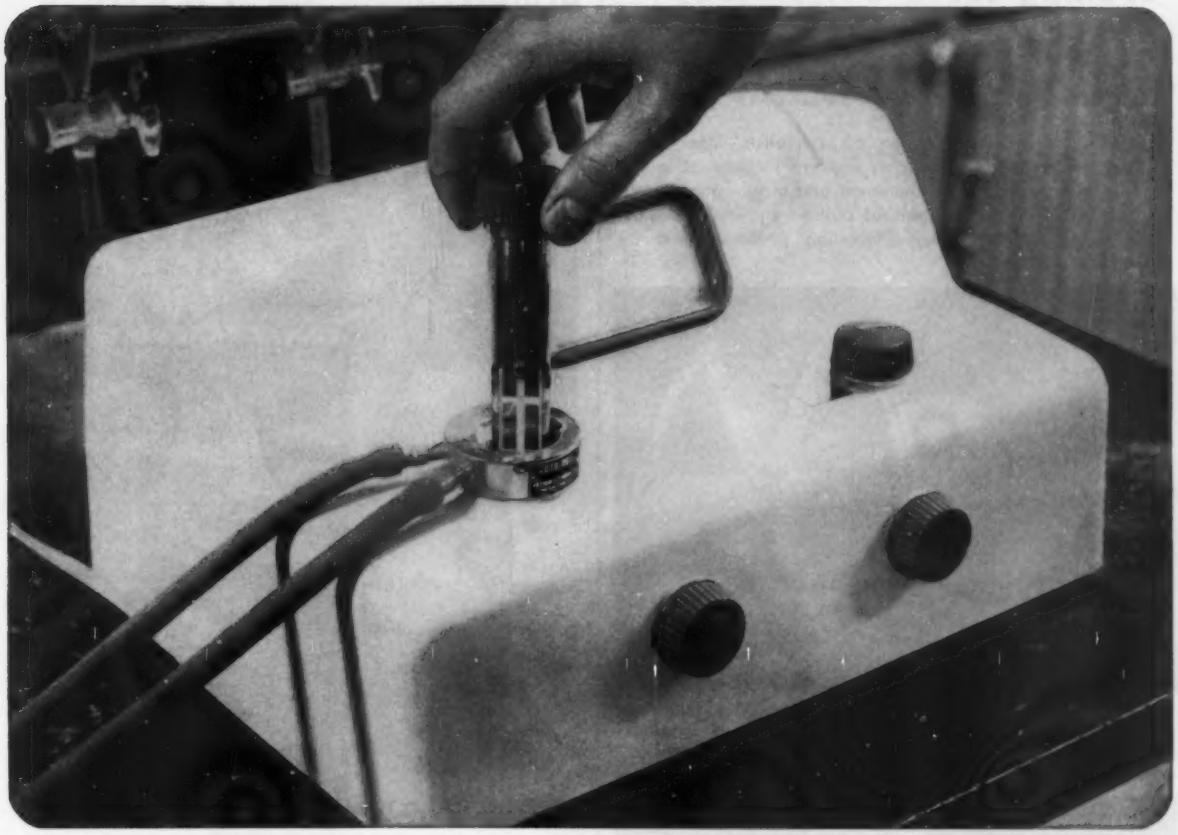

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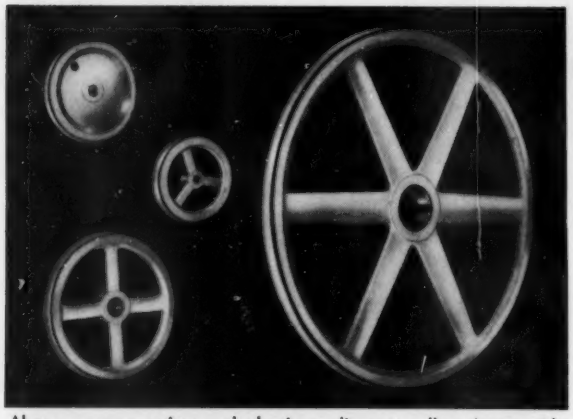
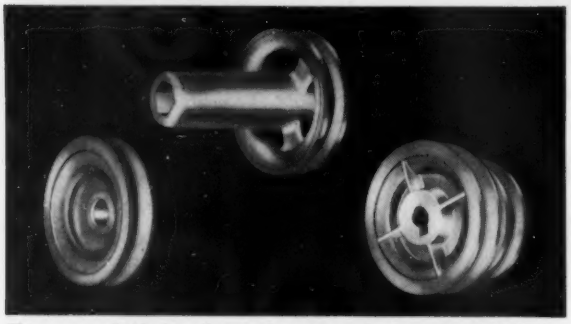


Above are magnesium and aluminum die cast pulleys (some with cast-in bushings) for wire enameling ovens. They meet specifications that require complete freedom from porosity while providing surfaces of machined quality smoothness.



This group of V-belt pulleys is die cast in aluminum by LITEMETAL for a manufacturer of "riding" power mowers. Note the cast keyway and cored hex hole to provide a sliding fit on the drive shaft.

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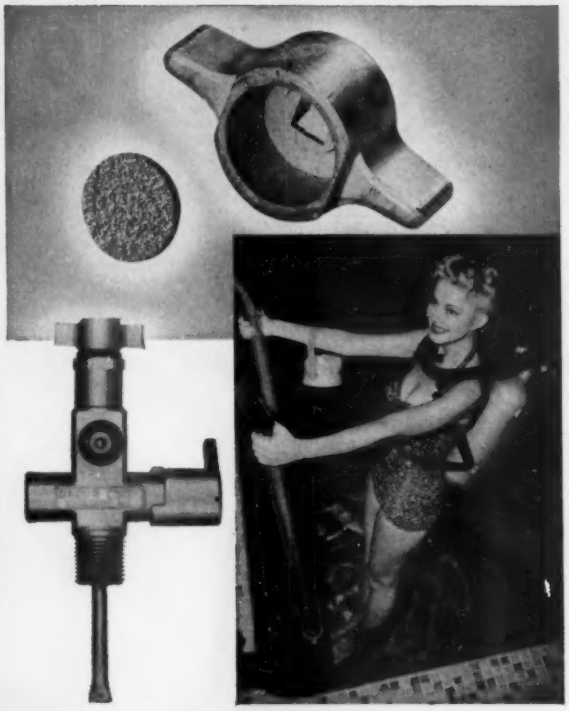

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Certified Alloys Co.
5463 Dunham Rd., Maple Hts. 37, Ohio

Electro Refractories & Abrasives Co.
213 Vars Bldg., Buffalo 2, N. Y.

Joseph Dixon Crucible Co.
167 Wayne St., Jersey City 3, N. J.

International Foundry & Supply Co.
P. O. Box 1053, Reading, Pa.

Lava Crucible-Refractories Co.
First National Bank Bldg., Pittsburgh, Pa.

Milles Equipment & Supply Co.
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Ross-Tacony Crucible Co.
State Rd. & Milnor, Philadelphia, Penna.

Rossborough Supply Co.
3376 W. 137 St., Cleveland 11, Ohio

Tiffin Foundry Inc.
W. Adams St., Tiffin, Ohio

Vesuvius Crucible Co.
P. O. Box 8275, Pittsburgh 18, Pa.

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(Note: This listing of die castable metals includes suppliers of base ingot metal as well as suppliers of alloy)

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Aluminium Limited Sales, Inc.
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Aluminum & Magnesium, Inc.
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Aluminum Company of America
Alcoa Bldg., Pittsburgh 19, Pa.

Aluminum Smelting & Refining Co., Inc.
5463 Dunham Rd., Maple Hts. 37, Ohio

American Alloys Corp.
45th & Belleview, Kansas City 11, Mo.

American Smelting & Refining Co.
Federated Metals Div., 120 Broadway, New York 5, N. Y.

Anaconda Aluminum Co.
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Apex Smelting Co.
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Belmont Smelting & Refining Works
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H. Cohn & Sons, Inc.
4528 West Division St., Chicago 51, Ill.

Aaron Ferrer & Sons, Inc.
2300 E. 11th St., Los Angeles, Calif.

General Smelting Co.
2901 E. Westmoreland St., Philadelphia, Pa.

Globoloy Metals, Inc.
1820 10th St., Oakland, Calif.

Henning Brothers & Smith, Inc.
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William F. Jobbins Co.
North Lake Ave., Aurora, Ill.

Kaiser Aluminum & Chemical Corp.
1924 W. Broadway, Oakland, Calif.

Morris P. Kirk & Sons, Inc.
2700 S. Indiana, Los Angeles, Calif.

R. Lavin & Sons, Inc.
3426 S. Kedzie Ave., Chicago 23, Ill.

McGowan Co., Inc.
1205 S. Boyle Ave., Los Angeles, Calif.

Michigan Standard Alloys Sales Co., Inc.
1256 Milton St., Benton Harbor, Mich.

Olin Mathieson Chemical Corp.
Aluminum Div.
400 Park Ave., New York, N. Y.

Reynolds Metals Co.
6601 W. Broad St., Richmond, Va.

Roth Smelting Co.
Thompson Rd., Syracuse, N. Y.

George Sall Metals Co., Inc.
2300 E. Butler St., Philadelphia 37, Pa.

Sonken-Galamba Corp.
Riverview at 2nd St., Kansas City 18, Kan.

U. S. Reduction Co.
Melville & Chicago Aves., E. Chicago, Ind.

Hyman Viener & Sons, Viener Metals
5300 Hatcher St., Richmond, Va.

Wabash Smelting, Inc.
P. O. Box 242, Wabash, Ind.

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American Smelting & Refining Co.
Federated Metals Div.
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Federated Metals Div.
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National Lead Co.
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Selma, Alabama

Apex Smelting Co.
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Belmont Smelting & Refining Works
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Dow Chemical Co.
Midland, Mich.

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Anaconda Sales Co.
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Roth Smelting Co.
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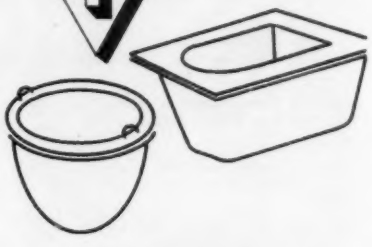

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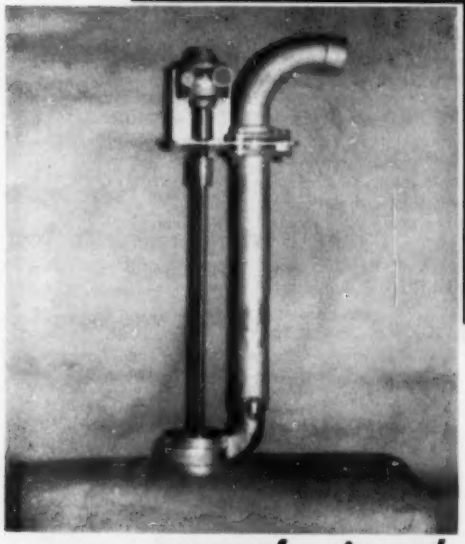

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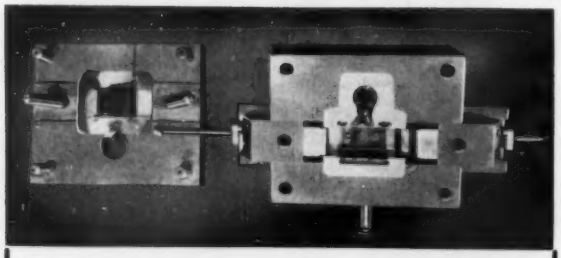

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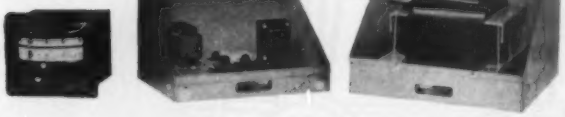

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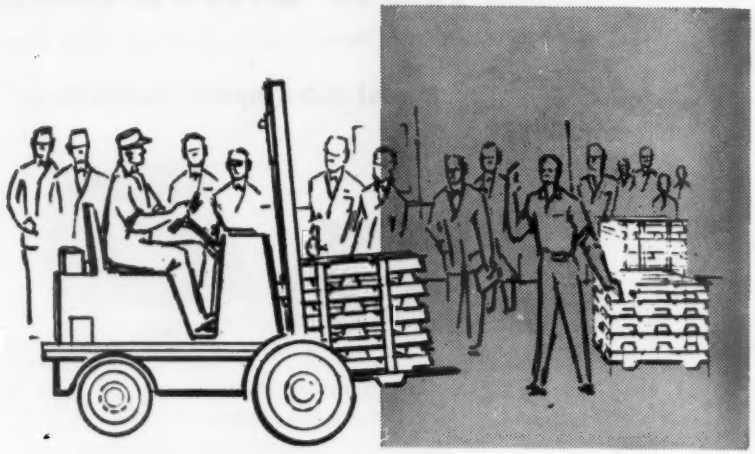

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for key see page 67

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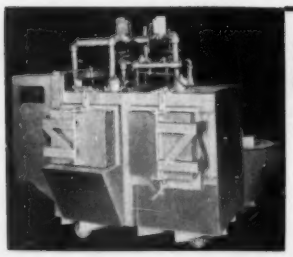

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FILM X-26
Die Release

All materials used as a mold release of organic nature (petroleum oils), have tendencies to form carbon spots or gaseous pockets that, when burned, leave carbon formations on the castings.

FILM X-26 DIE RELEASE is a new material developed to eliminate carbon formations to the greatest possible degree, even though it is designed to be reduced with an organic compound such as kerosene or similar oils.

Consisting of extra fine mesh aluminum powder, micronized graphite, high temperature additives to give added lubricity, FILM X-26 places a gray-silvercoat on the die surface that prevents staining, allows excellent surface flow of metal and properly lubricates cores and ejector pins.

For complete information write to:

The DIE CASTING "ID" CORP.
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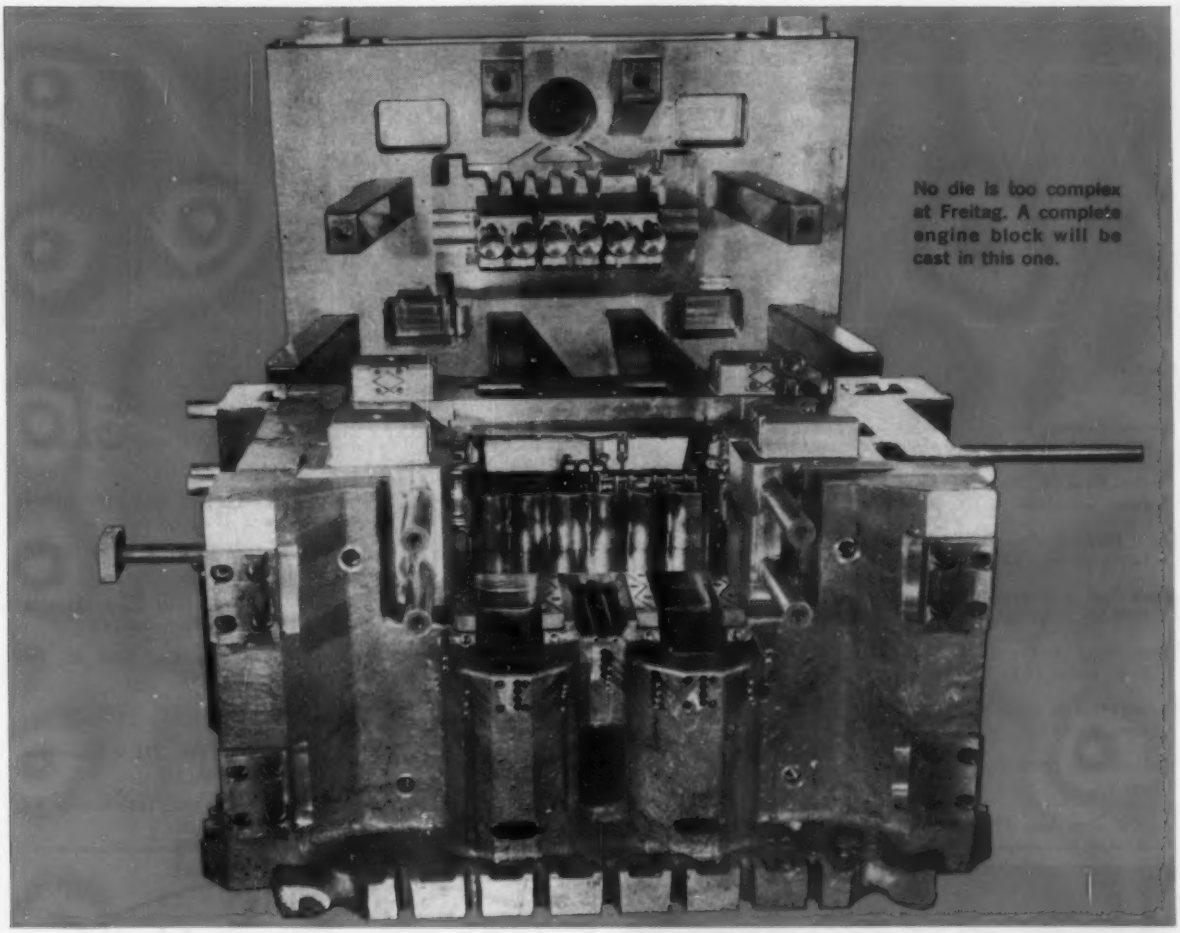

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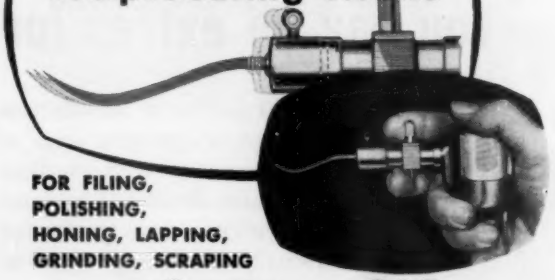

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Flexible Shaft RECIPROCATING TOOL

Saves costly hours of tedious hand labor on concave, convex and flat surfaces — and especially on hard-to-reach details of dies, molds, tools. The fast, precise reciprocating action can be varied from 0 to 100 strokes per second, with length of stroke from 0 to ¼ inch. Moderate in price, the Di-Profiler, with its many versatile accessories, pays for itself quickly through time-saving cost reduction.

Write for free demonstration or illustrated price list DV-10

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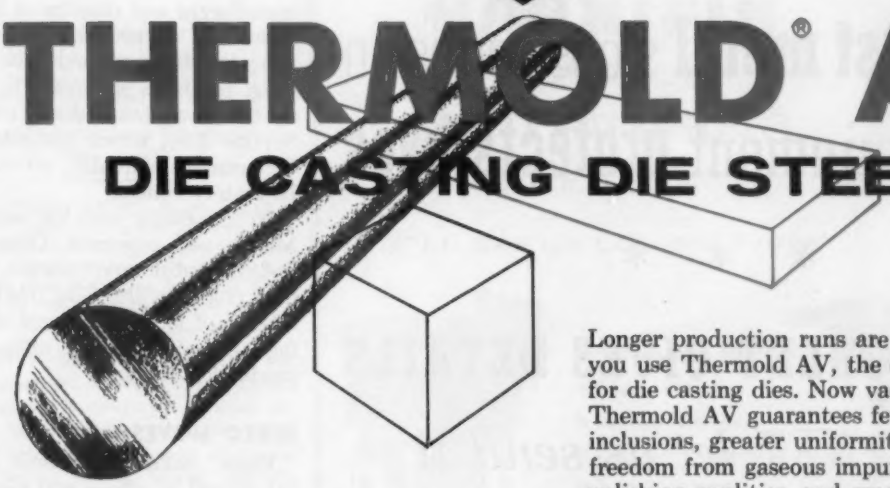
DIE CASTING DIE STEEL



Longer production runs are assured when you use Thermold AV, the quality steel for die casting dies. Now vacuum degassed—Thermold AV guarantees fewer non-metallic inclusions, greater uniformity of structure, freedom from gaseous impurities, higher polishing qualities, and greater resistance to fatigue and heat failures.

When you specify Thermold AV, you specify the ultimate in melting techniques, plus quality controls which have set the standard for the industry—small batch furnace melting, close control of press forging and annealing, and 100% Reflectoscope testing.

Write or call your nearest Universal-Cyclops sales office or warehouse today for complete information on Thermold AV—the quality die casting die steel available in all sizes to meet your requirements.

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won't rust metal stops corrosion

saves equipment **protects lives**

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ASARCO NAMES FOUR

At a recent meeting of the board of AMERICAN SMELTING AND REFINING CO., Robert D. Bradford and Edward McL. Tittmann were elected executive vice presidents; Charles F. Barber and Forrest G. Hamrick were elected vice presidents.

Bradford, a vice president since 1952 and a director since 1957, is president of Lake Asbestos of Quebec, Ltd., an Asarco subsidiary, and is in charge of the firm's Federated Metals Div. Tittmann was vice president in charge of smelting and refining operations. Barber joined Asarco in 1956 as general counsel. Hamrick, a director since 1957, also had been treasurer since that time.

MADER PROMOTED AT OBERDORFER

William A. Mader, formerly chief metallurgist and director of laboratories at OBERDORFER FOUNDRIES, INC., has been named vice president, technical services. He heads up the newly-established Technical Service Div., which combines the departments of quality, service, and laboratory control.

In connection with his new post, Mader will represent Oberdorfer and its subsidiary, OSWEGO CASTINGS CORP., in the field. He'll give a series of lectures to users of castings, including design, alloys, and production methods.

ESBEC MOVES

ESBEC BARREL FINISHING CORP. has moved its offices and manufacturing operations to Old Colony Industrial Park, Bldg. 16, 190 Henry St., Stamford, Conn. The Esbec Finishing Div. and laboratory facilities remain in Meriden.

OLIN MATHIESON NAMES EXECUTIVES

N. H. Collisson, a corporate vice president, has been named operating head of the METALS DIV. of OLIN MATHIESON CHEMICAL CORP. Collisson, formerly in charge of production and engineering for the corporation, also is president of ORMET CORP., a primary aluminum producing subsidiary jointly owned by Olin Mathieson and REVERE COPPER AND BRASS INC.

PMM OPPORTUNITIES

jobs & equipment

Opportunities rates: $20 for the first column-inch; $15 for each additional column-inch payable in advance. To answer box number advertisements, address responses to the box at Precision Metal Molding, 812 Huron Rd., Cleveland 15, Ohio. Closing date: 1st day of month preceding publication.

POSITIONS OPEN

One of Detroit Area's leading zinc die casting companies, wishes to obtain an established manufacturers representative in the Chicago-Milwaukee area who is handling allied lines. Have our own tool room and complete plating facilities. Commission basis. Send resume. Box 1160.

ESTIMATOR: Preferably experienced or familiar with plastic molding production and tooling. Person with closely related type of experience also considered. All replys held confidential. Submit resume listing salary requirement. Box 1260.

SALES REPRESENTATIVES—Progressive Mid-West Die Caster requires men to sell Zinc Die Castings. Excellent territories open for qualified men. Commission basis only. Address full details to Park Brass Co., Inc., 505 River Lane, Loves Park, Rockford, Illinois.

DIE CASTING DESIGNER WANTED — For new aluminum die casting operation. Experience required in design of aluminum die castings for economical production. Must know advantages and limitations of the die casting process and be familiar with die casting, tooling and equipment.

Duties to consist of making casting drawings for new products, redesign of existing parts for die casting and some die cast die and trim die design.

Reply giving education, experience and salary requirements. Remington Rand, Division of Sperry Rand Corp., Attention: Personnel Office, 1051 South Main St., Elmira, New York.

EQUIPMENT FOR SALE

5 — **NEW** 35 KW **AJAX** Complete Induction Furnaces, 78 KVA

Dip-out Type, 750 lb. aluminum

VERY LOW PRICE

Complete line melting & heat treat units

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Box 873, Reading, Pennsylvania

For Sale: — Baldwin-Defiance Compacting Press, built 1954, 100 tons capacity, 10" diameter by 6" deep die cavity, automatic operation 4 to 24 strokes per minute, 30 H.P. drive, shuttle type feeder. Can be seen in operation. Precision Grinding Wheel Co., Inc., 8301 Torresdale Avenue, Philadelphia 36, Pennsylvania.

Used 250 ton Locking Pressure Lake Erie Zinc Die Casting Machine. Die Platens 33" x 33" Tie bars 3" dia. Die Opening 18". Max. Die Space 30" Capacity per Shot 10 lbs. Air Operated Plunger. 8" Stroke. Motor driven Hyd. unit & Controls. Needs some repair — Machine Attractively Priced. Box 1360.

2 DIE CASTING MACHINES — 600 ton Lester Model HHP-3X-S for aluminum (convertible to zinc), new in 1946 and 1947, respectively. Complete with central hydraulic ejector, corepulls, etc. Excellent condition. Can be seen in operation in major Connecticut plant. Reasonable. Steven F. Krould, 505 Fifth Avenue, New York 17, New York.

NEW LEIMAN BROS. REPRESENTATIVE

The Great Lakes Supply Co., Cleveland, Ohio, has been named sales representative in northern Ohio for LEIMAN BROS., INC., Newark, N. J. Leiman Bros. manufacture a full line of rotary air pumps including vacuum pumps, gas boosters, air motors, and sand blasts.

PEASLEY EXPANDS

PEASLEY PRODUCTS, INC., DIE CASTING DIV., is planning expansion that will add 3000 square feet of floor space to its present building. The firm expects a 90% sales increase during the current year of aluminum and zinc die castings and permanent mold castings.

Get more parts per hour with Hannifin HYDRAULIC trimming*

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DIE TRIMMING

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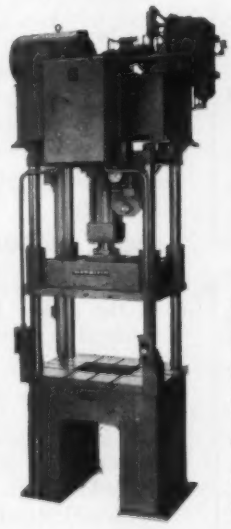

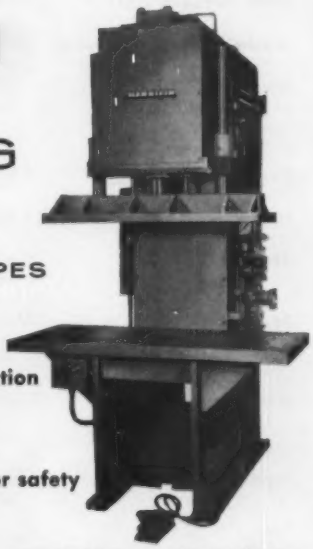

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SINTERED NICKEL BROADENS DESIGN LIMITS

CORMET A POROUS NICKEL

Material	Sintered, porous 99+ percent nickel
Yield strength, max.	10,000 psi
Maximum operating temp.	575° F (300° C)
Maximum sizes	
Sheet	12" x 30"
Cylinder	12" diameter x 24" long
Pore diameter range	1 to 45 microns
Maximum thickness	1 inch
Standard shapes	Cylinders, tubes, sheet hemi-cylinder troughs
Special shapes	Molds for special shapes can be made, within the limits of maximum sizes above
Machining	Corning can machine parts by a special process with precise tolerances
Sealing	Can be welded, brazed, and soldered to other materials

PROPERTIES OF CORMET A 2-MICRON PORE SIZE

Coef. of linear expansion	9.7 x 10^6 cm/cm/°C
Ultimate tensile strength	8116 psi
Yield strength	8120 psi
Mod. of elasticity	6.84 x 10^6
Density	.253 lb/cu. in.
Air flow at 15 psi for ¼" thick material, unmachined	5.5 cfm/ft.^{2}
Porosity	21.4%

PRESSED AND SINTERED porous nickel, capable of operating at temperatures to 575° F, is being produced in large and intricate shapes by Corning Glass Works.

This new material, called Cormet A, is fabricated by a new Corning process into sheets 12 by 30 inches, as well as cylinders two feet long, with 12-inch diameters. These large sizes are made possible by a new hydrostatic pressing process.

MANY UNUSUAL APPLICATIONS

The material can be used as a noncontacting conveyor when processing extra-sensitive materials, such as camera and X-ray film, gelatinized paper, adhesive materials, plastics, and products that have high surface sensitivity at elevated temperatures.

On such a conveyor, products ride on a thin cushion of air forced through the pores of the material. For example, Cormet A is used by the glass industry as a noncontacting chute for molten glass. Chute marks and wrinkles are eliminated by carrying the molten glass on a cushion of air from the furnace to the mold.

The porous metal can be made in sheet, piping, and elbowed or straight chutes. Unusual shapes, not possible by conventional pressing, also can be made by the new manufacturing process. Holes, projections, and indentations can be produced without additional finishing.

MORE UNIFORM POROSITY

The process is said to permit more uniform porosity of the nickel. Pore diameter of the material can be tailored to specifications between the limits of 1 to 45 microns.

Depending on porosity, yield strengths will go up to 10,000 psi. Maximum thickness of available pieces is 1 inch, although thicker pieces can be made. Fine orifice holes (0.012 inch) for burner plates can be drilled through as much as ⅝-inch thickness, using conventional metalworking machinery.

The surface of Cormet A can be machined by a special process to a high polish with no effect on permeability. With smooth surfaces, the material can be used as a fixed contact roller in high-speed machinery. Vacuum applied to the product through a porous nickel roller can hold the product securely the moment machinery stops, preventing inertia rolling or backlash.

DESIGN FOR THE
PMM PROCESSES

57 CONTACT POINTS BY DIE CASTING

AS CAST, you can get a far more complete component by die casting than by any other method. That's the experience of the Electric Tool Div. of the Stanley Works.

In the sabre saw illustrated the different housing members have 57 contact points which must accurately fit into other parts. You could take a sand casting and machine all these contact points into it, but then no one could afford the saw.

The five die castings shown in the illustration are part of the saw housing. They contain the 57 points of contact which must accurately fit into other parts. Sixteen of the points can be seen in the motor housing (top right) and the gear housing (bottom right). The two parts fit into each other. The motor housing requires two side pulls to meet coring specifications on the bottom of the piece. Rigid tolerances are necessary on the alignment details of the plunger housing (bottom center).

Even though Stanley does all of the surface finishing operations in its own plant, the as cast surface must be very good. Too much surface finishing could run the price of the saw out of reach of the average buyer.

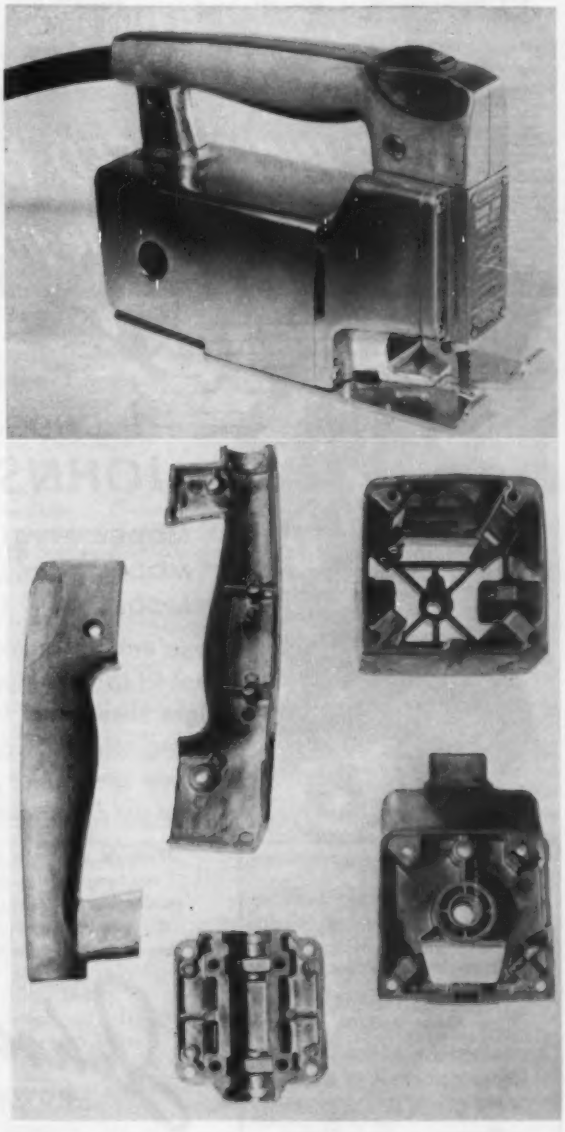
The deep stippling in the handle is formed during casting. It's there to give a firm, solid feel. But the thumb rest must be smooth to avoid discomfort to the operator.

Then there's the problem of eye appeal. Most of these power tools are bought for the home work shop. Impulse buying is an important factor. The styling which can be gotten with die cast housings lends eye appeal which could only be gotten at high cost if any other method of forming the parts were used.

Weight plays an important part also. A portable tool must avoid unnecessary weight. Aluminum is, therefore, the material choice. By die casting the wall thicknesses can be greatly reduced as compared with sand cast counter parts. Stiffening members at the proper points help to give the lightest possible castings with the required strength and rigidity.

There's another reason for using aluminum in these castings. Any other metal which would meet both strength and weight requirements would have to be given some surface protection. All that aluminum needs is cleaning and a light polishing. It will stay good looking for the life of the tool.

All of the castings for this saw are made by AINSWORTH-PRECISION CASTINGS CO.



INDEX OF ADVERTISERS

A

A.B.C. Die Casting Machine Co. 92
Advance Pressure Castings, Inc. 85
Advance Products Corp. 96
Ajax-Magnethermic Corp. 6
Allegheny-Ludlum Steel Corp. 105
Allied Research Products, Inc. 57
Alloys & Chemicals Corp. 17
Almco, Queen Products Div.
King-Seeley Corp. 55
Aluminum & Magnesium, Inc. 2
Aluminum Smelting & Refining Co. ..Cover II
American Die Casting Institute, Inc. 64-65
American Metal Climax, Inc. 5
American Smelting & Refining Co.
Federated Metals Div. 29
American Zinc Sales Co. 15
Apex Smelting Co. .....Cover IV
Arwood Precision Casting Corp. 16
Atois Tool & Mold Corp. 22
Auto-Diesel Piston Ring Co. 103

B

B & T Machinery Co. 43
B.I.P. Engineering Ltd. 4
Badger Die Casting Corp. 78
Belmont Smelting & Refining Works, Inc. .108
Benerson Corp. 118
Bethlehem Steel Co. 25
British Industries Corp. 27
Bunting Brass & Bronze Co. 19

C

Carborundum Co., The
Electro Minerals Div. 59
Cast-Master
H-P-M Div., Koehring Co. 1
Celanese Corp. of America 13
Certified Alloys Co. .....Cover II
Chicago White Metal Casting, Inc. 96
Cleveland Automatic Machine Co. 11
Columbia Tool Steel Co. 104
Cratex Manufacturing Co. 54
Crucible Manufacturers' Association 83

D

Damon Tool & Engineering Co., Inc. ...112
Detroit Mold Engineering Co. 32
Die Casting "ID" Corp. 116
DiSalle Plating & Die Casting Co. 95
Dodge Steel Co. 8
Dollin Corp. 44

E

Eastern Casting Corp. Div., Eastern
Malleable Iron Co., The 98
Engis Equipment Co.
Hyprez Division 118
Errington Mechanical Laboratory Inc. 54

F

Fiske Bros. Refining Co. 104
Foote Mineral Co. 18
Foundry Services, Inc. 60, 92
R. H. Freitag Mfg. Corp. 117

G

Gebauer Die & Tool Co. 102
Gries Reproducer Corp. 24

H

Hammond Machinery Builders, Inc. 58
Hampden Brass & Aluminum Co. 90
Hannifin Co.
A Div. of Parker-Hannifin Corp. 121
Harbison-Walker Refractories Co. 9
Henning Bros. & Smith, Inc. 114
Hevi-Duty Electric Co. 30
Hitchiner Mfg. Co. 102
Hoover Co., The .....Cover III
Hydraulic Press Mfg. Co.
Div. Koehring Co. 1

I

Indussa Corporation 98
International Minerals & Metals Corp. ..126

J

Johnson Machine & Press Corp. 124

K

Ken Die & Tool 100
Kennametal, Inc. 54
Kinney Mfg. Div., The
New York Air Brake Co. 75
J. A. Kozma Co. 116
Kux Machine Co. 49

L

Latrobe Die Casting Co. 81
Latrobe Steel Co. 87
Leiman Brothers, Inc. 76
Lester-Phoenix, Inc. 7
Lindberg Engineering Co. 79
Litemetal Dicast, Inc. 106

M

Madison-Kipp Corp. 73
Martin Grinding & Machine Works, Inc ..111
Marvel Engineering Co. 20
Metal Pumping Services, Inc. 110
Milwaukee Die Casting Co. 101
Misco Precision Casting Co. 63
Monsanto Chemical Co. 120
Mt. Vernon Die Casting Co. 93

N

National Lead Co. 26
Neilson Chemical Co. 112
New England Die Casting Co. 33-34
New Jersey Zinc Co., The 23, 106
New York Air Brake Co., The 75
Norton Co. 109

O

Oakite Products, Inc. 56

P

Paramount Die Casting Co. 99
Parker-Hannifin Corp. 121
Peasley Products, Inc. 60
Pierce-Waller, Inc. 60
Precise Castings, Inc. 103

R

Reese Metal Products Corp. 60
Republic Steel Corp. 21
Rex-Buckeye Co. 97
Roth Smelting Co. 110
Roto-Finish, Inc. 61

S

R. O. Schulz Co. 94
Smith & Sons, Inc., G. W. 66
Spincraft, Inc. 101
Stahl Specialty Co. 126
Stroh Die Casting Co., Inc. 82

T

Tiffin Foundry, Inc. 108
A. Triulzi 71
Twin City Die Castings Co. 70

U

Union Carbide Chemicals Co.
Division of U.C.C. 31
Universal-Cyclops Steel Corp. 119

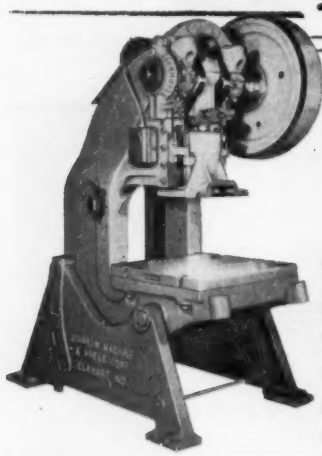
V

Vanadium-Alloys Steel Co. 50
Vascoloy-Ramet Corp. 12
Hyman Viener & Sons 100

W

West Instrument Corp. 113

FOR HIGH SPEED NEEDS
on a low tonnage press



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JOHNSON!

MODEL 27W (27 TON)
MODEL 45W (45 TON)
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These three presses are especially adapted for handling large light-weight sheets and for notching or piercing off-center operations. *And at slower speeds they perform equally well for die cast trimming.*

Special features of these models

- Extra Wide Beds
- Extra Deep Throats
- Extra Large Ram Faces
- Extra Shut Heights
- Extra Large Openings through Backs
- Pin Clutch or Air Clutch
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DATA OFFERED IN THIS MONTH'S ADS

the Reader Service Cards facing the last page will get you these free reference materials. Circle the numbers and mail.

1. **Die Casting Machines** — 12-page catalog from A.B.C. Die Casting Machine Co. gives complete specifications on a line of air operated and hydraulic operated die casting machines in capacities from 16 tons to 600 tons.
3. **Die Castings** — Brochure contains valuable data for your purchasing and engineering departments. Also shows the complete facilities of Advance Pressure Castings Corp. for producing die castings.
14. **Investment Casting** — "Practical Guide to Investment Casting", a 44-page design handbook from Arwood Precision Casting Corp.
16. **Piston Rings** — Catalog from Auto-Diesel Piston Ring Co. lists plunger rings, tips and shot well sleeves for all die casting machine users.
17. **Die Casting Machines** — Catalog gives complete specifications on a line of high-pressure cold-chamber and hot-chamber machines. B & T Machinery Co.
20. **Alloys** — Literature from Belmont Smelting & Refining Works, Inc. explains their ingot inspection system. All metals and alloys produced by the company are listed.
23. **Sintering** — The "Engineering Handbook of Powder Metallurgy" is a technical booklet on engineering and manufacturing of sintered metals, bearings and parts. Bunting Brass & Bronze Co.
25. **Die Castings** — Technical data on zinc and aluminum die casting. Chicago White Metal Casting, Inc.
28. **Crucible Melting** — "Getting the Most from Your Crucible Melting", is a series of brochures from Crucible Manufacturers' Assoc.
30. **Die Casting Dies** — Brochure shows the company's complete engineering facilities for making die casting dies. Damen Tool & Engineering Co., Inc.
31. **Standard Unit Dies** — Literature from Detroit Mold Engineering Co. tells how to make die changes in minutes.
32. **Die Release Lubricant** — Technical data on Film X-26 Die Release, a new material said to prevent staining, allow excellent flow of metal. Die Casting "ID" Corp.
33. **Die Castings** — Brochure from DiSalle Plating & Die Casting Co., shows their facilities for making your specialized die castings.
34. **Die Castings** — A 16-page facilities brochure from Dollin Corp., shows their techniques for solving rigid design requirements.
36. **Die Profiler** — Price List DV-10 gives specifications on a flexible shaft reciprocating tool for grinding, filing, scraping, honing, lapping. Engis Equipment Co.
37. **Cutting Fluid** — Technical data on Fibrecool, a water soluble cutting fluid. Fiske Bros. Refining Co.
39. **Eliminate Oxides** — dirt and other impurities from aluminum and zinc melts. Technical bulletin from Foundry Services, Inc., describes Foseco Coverals.
40. **Eliminate Porosity** — Technical bulletin tells how Fosco Degasers eliminate pinhole porosity and oxide inclusions in aluminum castings. Foundry Services, Inc.
42. **Die Cast Fasteners** — Fastener catalog from Gries Reproducer Corp. describes die cast fasteners.
44. **Die Castings** — "Behind the Scenes", a report from Hampden Brass & Aluminum Co. on their facilities for handling your die casting requirements.
46. **Zinc Alloy Facts** — "Reference Book and Guide on Zamak Die Casting Alloys", includes production and design data. Henning Bros. & Smith, Incorporated.
47. **Furnaces** — Technical bulletin from Hevi-Duty Electric Co. gives data on electric or fuel-fired heat treating furnaces.
49. **Die Casting Machines** — Literature gives complete specifications on hot and cold chamber types, 100 to 2000 ton capacity. Cast-Master, H-P-M Div., Koehring Co.
52. **Trim Presses** — Catalog No. 59 from Johnson Machine & Press Corp. covers the complete line of Johnson Power trim presses.
54. **Die Casting Machines** — Catalog gives complete specifications on the full line of Kux Machine Co. die casting machines.
55. **Carbide Tools** — Literature gives specifications, prices on solid carbide fluted tools. Kennametal, Inc.
56. **Furnaces** — Complete specifications on Radiant fired breakdown, holding furnaces. J. A. Kozma Co.
58. **Die Steel** — Technical data sheet on VDC Type H-12 hot work steel that is easy to machine, responds uniformly to heat treatment. Latrobe Steel Co.
59. **High Vacuum Pumps** — Catalog shows construction, sizes, capacities and special features of Leiman Rotary Positive High Vacuum Pumps. Leiman Bros., Inc.
61. **Die Castings** — Design data from Litemetal Dicast, Inc. on aluminum, magnesium and zinc die castings.
63. **Die Casting Accessories** — Technical data on a complete line of adapters, bushings, metal wells, shot sleeves or cylinders, plungers, goosenecks. Martin Grinding & Machine Works, Inc.
66. **Investment Castings** — The bimonthly magazine, "Casting About With Misco", is available from Misco Precision Casting Co.
72. **Cutting Costs** — with brass powder metallurgy. Engineering data booklet evaluates this production method in terms of particular needs. The New Jersey Zinc Co.
73. **High Vacuum Furnace** — Technical literature on a high vacuum furnace that melts and casts pieces up to 50 pounds. Kinney Mfg. Div., The New York Air Brake Co.
74. **Refractories** — Technical literature on Crystolon Refractories that stand up to all the rigors of aluminum melting and transfer operations. Norton Co.
75. **Die Castings** — Brochure from Paramount Die Casting Co. serves as a brief guide to designing for die castings and shows the company's facilities.
76. **Trim Presses** — Literature gives specifications and advantages on open gap or column type hydraulic trimming presses. Hannifin Co.
78. **Cleans, Lubricates** — That's what the Air-Lube System, manufactured by Pierce-Waller Inc. does. Technical data sheets available.
80. **Sintering Savings** — A technical report, "How to Cut Costs With The Remet Powdered Metals Process" is available from Reese Metal Products Corp.
81. **High Strength Powder** — Technical literature includes comparative fatigue test data on Republic HS 6460 High Strength Powder. Republic Steel Corp.
85. **Ladles** — Technical data and prices are available from Spincraft, Inc. on their stainless steel ladles.
86. **Automatic Casting Machine** — Technical bulletin from Stahl Speciality Co. describes the Stahl Autocast, an automatic permanent mold casting machine for your aluminum alloy casting operations.
87. **Statistical Quality Control** — for die castings. Technical literature from Stroh Die Castings Co., Inc. describes their use of quality control for lower inspection costs.
89. **Fire-Resistant Fluids** — The booklet "Ucon Hydrolubes Spell Safety", is available from the Union Carbide Chemicals Co.
92. **Investment Castings** — Booklet from Vascoloy-Ramet," Solve Your Small Parts Problems", shows the design flexibility of the investment casting process.
93. **Controllers** — Technical bulletin gives data on Model JSB Stepless

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SAVE: TIME WORK DOLLARS

on your aluminum alloy casting operations with the

***Stahl* AUTOCAST**

Automatic Permanent Mold Casting Machine

• **PORTABLE...** Both machines can be moved as a unit to different furnaces for casting different alloys.

• **FAST...** Automatic Timer eliminates human error. Dies easily interchanged. Dies need less maintenance of refractory coating.

• **ACCURATE...** Timer has 3-second graduations from 0 to 5 minutes; counter records cycles to 9,999; jog buttons for "inching" mold in either direction.

We can adapt your molds to the AUTOCAST, or make new dies to your specifications.

Send for our technical brochure.

STAHL SPECIALTY CO.
KINGSVILLE, MISSOURI

Controllers for controlling the most unstable temperature systems. West Instrument Corp.

95. **Corrosion Protection** — Technical manuals from Allied Research Products, Inc. on chromate conversion coatings and clear protective coatings.

96. **Finishing Equipment** — Almco, Queen Products, Div., King-Seeley Corp. has issued an album of new products. It contains brochures on a spindle machine, Vibrasheen, and compounds and media for barrel finishing.

97. **Controlled Barrel Finishing** — Manual gives technical data on a complete system of controlled barrel finishing, CARBOtrol 7. The Carborundum Co., Electro Minerals Div.

98. **Rubberized Abrasives** — 8-page catalog on rubberized abrasives for deburring, smoothing and polishing tools, dies, patterns, molds, etc. Cratex, Mfg. Co.

99. **Drilling & Tapping Head** — that is adjustable to any pattern of holes, is described in literature. Errington Mechanical Laboratory, Inc.

100. **Flat Finishers** — for grinding, polishing and deburring in one operation are presented in technical literature from Hammond Machinery Builders, Inc.

101. **Tank Cleaner** — Literature on Oakite 24, an alkaline cleaner that is reported to get under the dirt layers and tear the soil from the surface. Oakite Products, Inc.

102. **Vibratory Finishing** — Literature describes the Vibratron for precise finishing of castings. Roto-Finish Inc.

116. **Die Casting Machines** — Specifications on the complete line of Lester die casting machines for aluminum or zinc. Lester-Phoenix, Inc.

120. **Trim Press** — Literature from B.I.P. Engineering Ltd., gives complete specifications on a new fast-cycle hydraulic trim press.

121. **Investment Castings** — Technical brochure explains the new ceramic shell technique for investment casting. Hitchiner Mfg. Co., Inc.

123. **Die Casting Machine** — Literature describes the DCMT Mac 99, a 15 ton, 1 lb. capacity automatic cycling die casting machine. DCMT Sales Corp.

125. **Melting Pots** — Literature describes a complete line of standard size quality melting pots for every non-ferrous melting operation. Tiffin Foundry, Inc.

126. **Tool Steels** — Publication list from Allegheny Ludlum Steel Corp., gives data on more than 125 technical publications.

131. **Die Steel** — Thermold AV, a vacuum degassed die casting die steel, is said to assure longer production runs. Details are available from Universal-Cyclops Steel Corp.

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SPECIAL HIGH GRADE
ZINC — 99.99%

International Minerals and Metals Corp.

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2	20	38	56	74	92	110	128	146	164	182	200	218	236	254	272	290	308	326	344	362	380	398
3	21	39	57	75	93	111	129	147	165	183	201	219	237	255	273	291	309	327	345	363	381	399
4	22	40	58	76	94	112	130	148	166	184	202	220	238	256	274	292	310	328	346	364	382	400
5	23	41	59	77	95	113	131	149	167	185	203	221	239	257	275	293	311	329	347	365	383	401
6	24	42	60	78	96	114	132	150	168	186	204	222	240	258	276	294	312	330	348	366	384	402
7	25	43	61	79	97	115	133	151	169	187	205	223	241	259	277	295	313	331	349	367	385	403
8	26	44	62	80	98	116	134	152	170	188	206	224	242	260	278	296	314	332	350	368	386	404
9	27	45	63	81	99	117	135	153	171	189	207	225	243	261	279	297	315	333	351	369	387	405
10	28	46	64	82	100	118	136	154	172	190	208	226	244	262	280	298	316	334	352	370	388	406
11	29	47	65	83	101	119	137	155	173	191	209	227	245	263	281	299	317	335	353	371	389	407
12	30	48	66	84	102	120	138	156	174	192	210	228	246	264	282	300	318	336	354	372	390	408
13	31	49	67	85	103	121	139	157	175	193	211	229	247	265	283	301	319	337	355	373	391	409
14	32	50	68	86	104	122	140	158	176	194	212	230	248	266	284	302	320	338	356	374	392	410
15	33	51	69	87	105	123	141	159	177	195	213	231	249	267	285	303	321	339	357	375	393	411
16	34	52	70	88	106	124	142	160	178	196	214	232	250	268	286	304	322	340	358	376	394	412
17	35	53	71	89	107	125	143	161	179	197	215	233	251	269	287	305	323	341	359	377	395	413
18	36	54	72	90	108	126	144	162	180	198	216	234	252	270	288	306	324	342	360	378	396	414

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- ☐ Plaster Mold Castings
- ☐ Shell Mold Castings
- ☐ None of these

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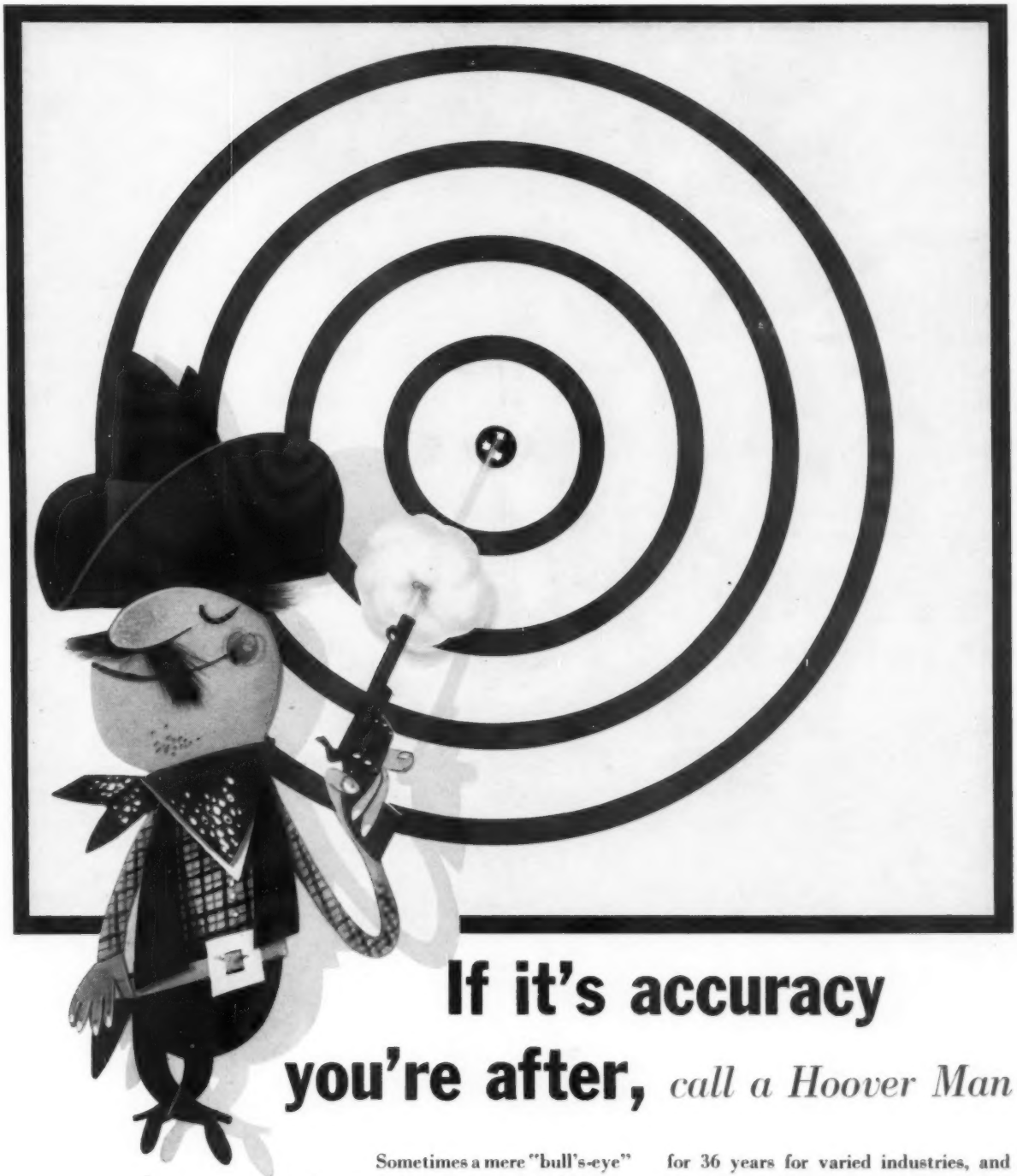

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Sometimes a mere "bull's-eye" isn't enough. Die casting can be like that . . . where a little extra accuracy makes a big difference. We've been offering quality aluminum and zinc alloy castings for 36 years for varied industries, and they seem to like our pin-point precision. Maybe Hoover has the answer to *your* die casting problems, too. Why not call one of our Sales Engineers and find out?

HOOVER

THE HOOVER COMPANY, Die Casting Division, North Canton, Ohio
In Canada — Hamilton, Ontario

Die Casting specialists since 1922

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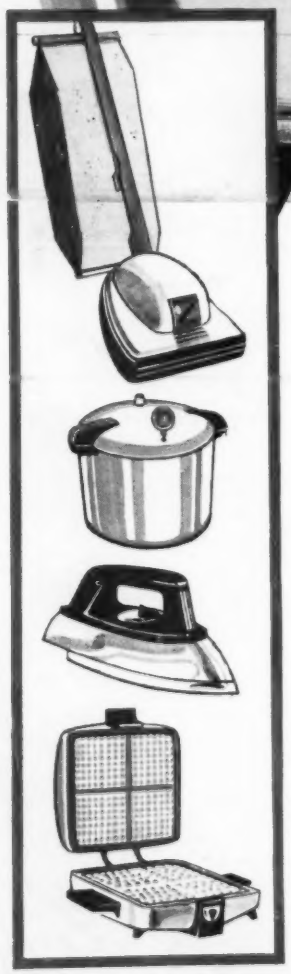
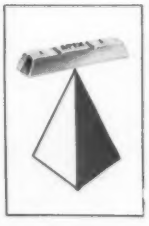


Today's homemaker manages a neat, well-run household and still enjoys a full share of leisure time—with a big assist from aluminum and its modern, work saving applications.

She finds new convenience with aluminum pans and utensils that protect the taste of food, clean easily, heat quickly and evenly . . . she benefits from the better operation that strong, durable aluminum cast parts bring to her electric iron, vacuum cleaner, electric grill and scores of other appliances.

Apex and its metallurgists work closely with the foundries and die casters who serve the appliance industry. Custom and standard aluminum alloys, produced by Apex to rigid specifications, provide the performance and quality you want in these modern day work savers.

Research leadership back of every ingot



APEX SMELTING COMPANY

Producers of ALUMINUM, MAGNESIUM AND ZINC ALLOYS

CHICAGO 12 CLEVELAND 5 LONG BEACH 10, CAL.
SPRINGFIELD, OREGON (National Metallurgical Corp.)

Warehouse distributor of ALCAN foundry alloy ingot

Your products may also be produced better and more efficiently with the help of aluminum castings. Apex Smelting and the companies it serves in the die casting and foundry industry stand ready to assist you and your engineers.

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